



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

Vol. 3

SEPTEMBER, 1909

No. 4

NORTH DAKOTA MAGAZINE

THE STATE'S RESOURCES
AGRICULTURAL
INDUSTRIAL & COMMERCIAL

OUR WATCHWORD

"Progress and Prosperity"

PUBLISHED BY THE AGRICULTURAL DEPARTMENT
W. O. GILBREATH-Commissioner
Bismarck—North Dakota

NORTH DAKOTA MAGAZINE

Published by
W. C. GLIBREATH, Commissioner of Agriculture
Bismarck, N. D.

Entered as second class matter May 22, 1906, at the Post Office at Bismarck, North Dakota, under the Act of Congress of June 6, 1900.

VOL. 3

NO. 4

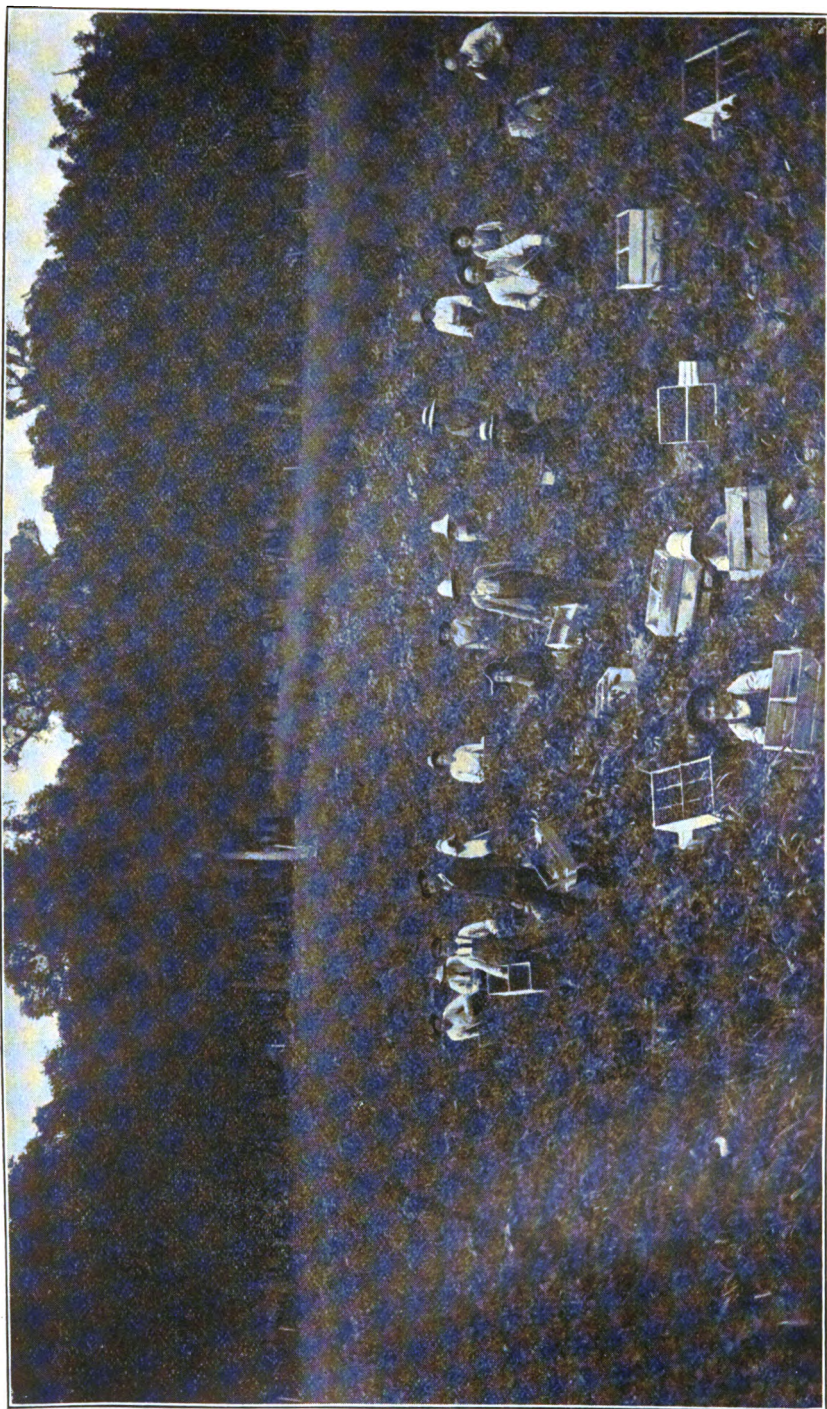
SEPTEMBER, 1909

CONTENTS

	PAGE
Popular History of North Dakota— <i>Col. C. A. Lounsberry</i> - - - -	1
Nature Improved Upon - - - -	11
Educational Advantages of North Dakota - - - -	19
Live Stock in North Dakota, Past and Present - - - -	25
North Dakota Along the Line of the Chicago, Milwaukee & Puget Sound Railway - - - -	29
Sunset in North Dakota—A Poem - - - -	32
North Dakota Honored - - - -	34
Down the Missouri to Dixie—A Poem — <i>Joseph Mills Hanson</i> - - - -	36
Dry Farming - - - -	38
Intensify=Diversify - - - -	41
Teach Him How - - - -	45
Science Wins - - - -	49
Pingree, Stutsman County - - - -	51
A Sum in Proportion - - - -	57
Can You? - - - -	61
Agriculture in North Dakota - - - -	65
Fruit Growing in North Dakota - - - -	79
Hunting and Fishing in North Dakota - - - -	81
A Sound Investment - - - -	87
An Empire in the Making - - - -	89
The Golden Rule - - - -	93



Buhr B 234031 N



Strawberry Patch of Levi Blades, Grafton, N. D. Over 5,000 quarts picked Off One and Five-eighths Acres.

NORTH DAKOTA MAGAZINE

VOL. III

SEPTEMBER, 1909

No. 4

POPULAR HISTORY OF NORTH DAKOTA

BY CLEMENT A. LOUNSBERRY.

(Copyright 1908, by C. A. Lounsberry.)

CHAPTER XV.

The Religion of the Dakota Indians—The Ghost Dance—The Prophet of the Delawares—The Shawnee Prophet—Tzibo—Wovoka's Golden Rule—Short Bull—Kicking Bear—Death of Sitting Bull—The Battle of Wounded Knee—End of the Ghost Dance Craze.

HOPE springs eternal in the human breast. The Indians of America, no less than the white men of Europe, and the brown men of Asia, have had many prophets and messiahs, who have taught them in spiritual things.

Among the Indian teachers, one of the most noted was the prophet of the Delawares, who claimed to have visions in which he received instructions from the Master of Life, who taught a return to the simple life of the redman as the only avenue to Indian happiness. His followers were required to give up all they had acquired from the white men and return to the fire sticks and bows and arrows of their fathers, when it would be possible for them to organize and drive away the white men who were encroaching upon them.

In 1805 there was a prophet among the Shawnees, a brother to the great and good Tecumseh, much older than the latter, who also communed with the Master of Life, giving revelations to his followers. He warned against the use of intoxicating liquors,

picturing the horrors of drunkenness in such lurid light that intoxication became almost unknown among the Indians during the period of his influence. He required a return to the primitive life and that they throw away their medicine bags, give up their dogs and firearms, and keep a fire ever burning in their camps. His followers carried their virtues to such an extent that they even emulated the whites of New England and burned their witches, roasting one subject four days before death came to her relief.

His fame extended to the extreme southwest, where the Indians had looked for a messiah under whose influence "the earth should teem with fruits and flowers without the pains of culture, when an ear of corn should be as much as one man could carry, and the cotton as it grew should of its own accord take the rich dyes of human art, and the air should be laden with intoxicating perfumes and the melody of birds." Under the vigorous preaching of the prophet many in the southwest gave up their flocks and herds, their apiaries and orchards—for they were becoming civilized—and returned to the forests to take up the simple life of their fathers. The influence of the prophet extended to all western and southwestern tribes. Even the far away Ojibeways killed their dogs, ceased to fear the Sioux and tried to lead the life taught by the one they had come to love and look upon as a redeemer. They had mysterious rites of confirmation and were taught to clasp the hand of the prophet as the Christian takes the body and blood of Jesus through the holy eucharist.

When this excitement was at its height Tecumseh took advantage of it to unite the Indians of the west and southwest to resist the further advance of the whites, drawing the line at the Ohio, as Sitting Bull later drew it at the Missouri. But when Tecumseh was away in the southwest his brother, the prophet, inspired the attack on Vincennes, which ended his role as a prophet and proved disastrous to Tecumseh's plans.

Born during this period of excitement another Indian prophet appeared in Nevada, Tvibo, said to have been the father of the Indian messiah of 1890. He taught the resurrection of the dead and restoration of the game and the disappearance of the whites, leaving their effects and improvements to be enjoyed by the Indians.

To bring about these results it was taught that there must be obedience to the ten commandments, and in addition they must

cease using intoxicating liquors and refrain from gambling and horse racing. The propaganda was carried on secretly, and it was accompanied by a dance, which was the forerunner of the ghost dance. Since 1871 there have been other messiahs, all teaching substantially the same things, their highest hopes being centered on the return of the game, and the disappearance of the whites, when the Indian should again enter on the life enjoyed by their fathers.

When Tvibo died, in 1870, he left a son, Wovoka, then fourteen years of age, who had been reared in the land of his father, Mason Valley, Nevada, and who dreamed his dreams, and as he says when the sun died, meaning an eclipse, he went up into heaven and saw God and all of the people who died long ago, and returning from his sleep he told his people what he had seen and heard, and his fame went out to all Indian lands, and the tribes sent their wise men to see and know of him. Dakota sent its representatives and the delegates declare that each one, though of different tribes and language, heard Wovoka in his own tongue. And Wovoka told them that they must not hurt anyone or do any harm to anyone; that they must not fight and must always do right for it would give them much satisfaction; that they must not tell any lies or refuse to work for the whites or make any trouble for them; that when their friends die they must not cry. He charged them that they must not tell the white people but that the son of God had returned to the earth; that the dead were alive and there would be no more sickness, and everyone would be young again; this might be in the fall or in the spring, he could not tell, but they must dance every six weeks, every night for four nights and the fifth night till morning. Then they must bathe in the river and go home, and when they danced they must make a feast and have food that every one might eat. And he gave them some new food and some sacred paint, and promised that he would come to them sometime.

And thus equipped the wise men of the tribes returned to their people to teach the return of the ghosts and inaugurate the ghost dance. For the ghosts were coming and they were driving before them vast herds of antelope and buffalo and other game.

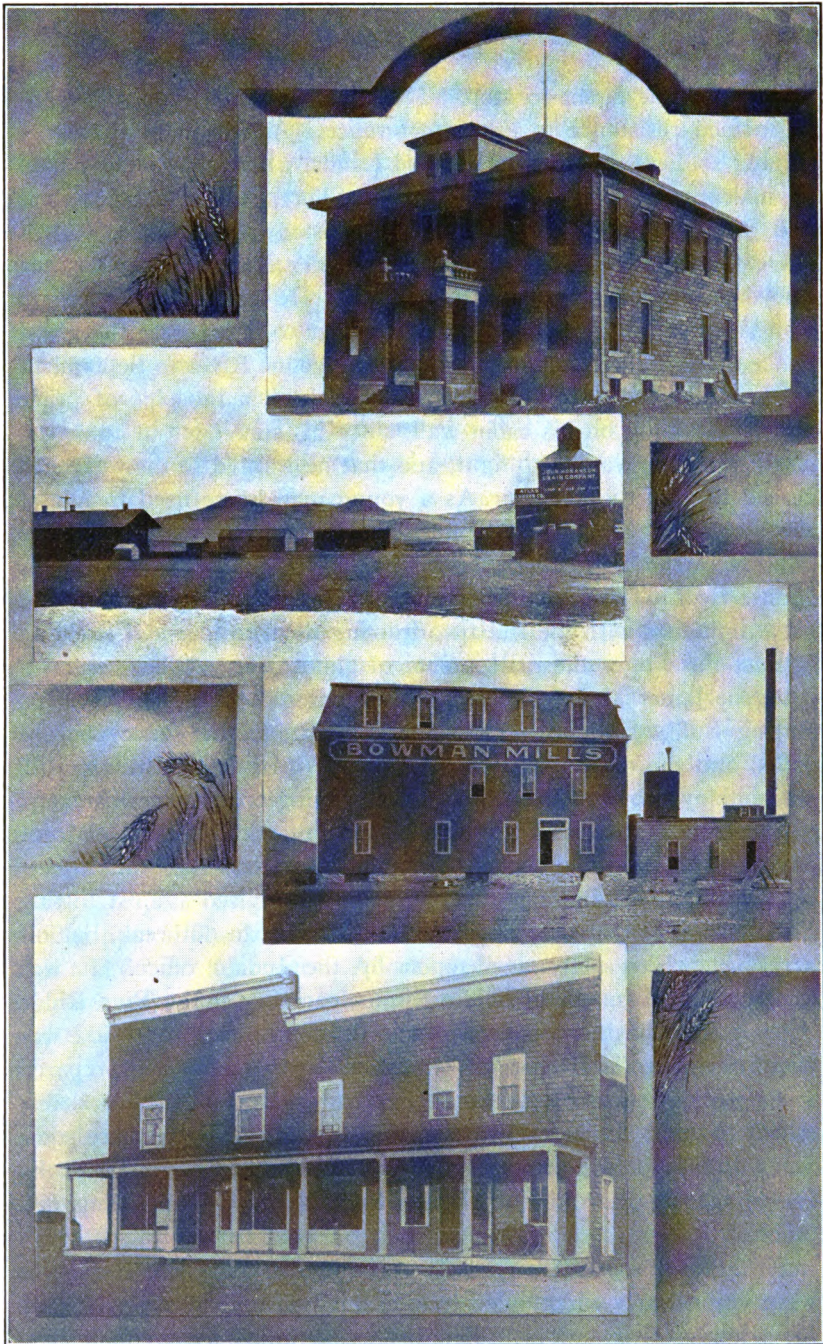
One of the Indians who was present at the Mason Valley conference with Wovoka said of the meeting:

"Heap talk all the time. Indians hear all about it everywhere, Indians come from long way off to hear him. They come from east;

they make signs. All Indians must dance, everywhere keep on dancing. Pretty soon Big Man come. He bring back all game, of every-kind, the game being thick everywhere. All dead Indians come back and live again. They all be strong, just like young Indian and have fine time. When Old Man come this way then all Indians go to the mountains, high up away from the whites. Whites can't hurt Indians then. Then while Indians go way up high big flood come and all white people get drowned. After that water go away, then nobody but Indians everywhere, all kinds of game thick. Indians who don't dance, who do not believe this word, will grow little, just about a foot high and stay that way. Some will be turned into wood and will be burned in fire."

The returning delegates brought this new religion to the Dakota Indians in the winter of 1889 and 1890. Sitting Bull was its chief exponent at Standing Rock. Kicking Bull and Big Foot were at the Sheyenne agency and Short Bull was the demonstrator at the Rosebud. Short Bull had visited Wovoka; he had touched the hand of the Messiah; had received from him the holy bread and the sacred paint and had listened to his words; he had received messages through him from his friends in spirit-land and had been told of their homes and their employments, and of the vast herds of buffalo and other game and had been assured that the day was soon coming when there would no longer be any whites to make them afraid. He told the Indians that they were living the sacred life; that the soldiers guns were the only thing of which they were afraid, but these belonged to their father in heaven, and they should no longer fear the soldiers. He said: "If the soldiers surround you four deep, three of you on whom I have placed the holy shirt, shall sing a song which I have taught you, passing around them, when some one will fall dead. The others will start to run, but their horses will sink. The riders will jump from their horses and they will sink also. Then you can do to them as you desire. Now you must know this that all of the race will be dead, there will be only five thousand living on earth." He urged that they should dance and be prepared for the time when these things should come.

And thus they were prepared for the events of 1890. The agent at Pine Ridge was frantic with fear. He telegraphed every day for troops. In August, 1890, two thousand Indians met for the dance near Pine Ridge Agency and refused to give it up when



1. Court House, Bowman, N. D. 2. Haynes Depot and Elevator. 3. Mill, Bowman. 4. Business Houses, Bowman.

ordered by the agent to stop. They leveled their guns, threatening armed resistance to any interference. At the mere rumor of coming soldiers they fled to the Bad Lands, where they were joined by malcontents from other agencies. Short Bull at the Rosebud and Big Foot at the Sheyenne, also persisted in the dance.

October 9, 1890, a party of Indians under Kicking Bear left the Sheyenne Agency to visit Sitting Bull. He had invited them to visit them at his camp on the Grand River to inaugurate the ghost dance there. The dance had begun at Sheyenne River in September.

Sitting Bull's heart was bad. He had broken the pipe of peace which had hung on his cabin wall, since his surrender in 1881, declaring that he wanted to fight, and that he wanted to die. He had ceased to visit the agency. As a young man he refused to live at the agencies. He had spent the summers on the plains and the winters in the Bad Lands, or mountains, or in the timber on the Mouse river. Though a medicine man rather than a warrior, he had great influence with the Indians, drawing them to him and wielding against the whites the malcontents of almost every tribe.

Agent James McLaughlin, of the Standing Rock Agency, visited Sitting Bull's camp to induce him to return to the agency but he failed and the dance went on. Colonel W. F. Cody, Buffalo Bill, was employed by the Indian office at Washington to go to his camp, in the hope that he could influence him, but without avail. Major McLaughlin, who had succeeded much better than the other agents in controlling the Indians under his charge, advised against Sitting Bull's arrest at that time, lest it should lead to an outbreak, but his arrest had been determined upon by the Indian office. It was known that he intended to join the malcontents at the Pine Ridge Agency and that he had been invited to come there for "God was about to appear." He had asked permission to go but had prepared to go without permission. So on September 14, 1890, it was determined to make the arrest without further delay. There were some forty Indian police available and two companies of military, by forced marching from Fort Yates, were placed in supporting distance.

Sitting Bull's arrest was made without resistance, but the police were immediately surrounded by one hundred and fifty or more of his friends on whom he called to rescue him. Whereupon they rushed upon the police and engaged in a hand to hand battle. One

of Sitting Bull's followers shot Lieutenant Bull Head, the officer in command of the Indian police, in the side. Bull Head turned and shot Sitting Bull, who was also shot at the same time by Sergeant Red Tomahawk. Sergeant Shave Head was also shot. Catch the Bear, of Sitting Bull's party, who fired the first shot, was killed by Alone Man, one of the Indian police. There were eight of Sitting Bull's party killed, including his seventeen year old son. The Indian police lost six killed or mortally wounded. Most of Sitting Bull's followers joined the Indians in the Bad Lands.

Two weeks later, under the humane and fearless work of the military officers most of the Indians who fled to the Bad Lands on the approach of the military, had been induced to return to their agencies.

Big Foot's band and a few of Sitting Bull's Indians only remained in the field. Big Foot had agreed to surrender. He was ill with pneumonia, and the army physician had made him comfortable in his tipi. The pipe of peace hung on the center pole of his lodge. A white flag floated from the middle of his camp in token of his surrender. The women and children stood about the doors of the tipis, watching the soldiers in their camp, without thought of harm. The camps of the soldiers entirely surrounded the Indian camp. The military officers had demanded the surrender of the Indians' guns, in order to remove the temptation of another uprising, and had promised food and clothing, and transportation for their return to their respective agencies. A group of soldiers stood near the tipi of Big Foot. The Indians had been requested to come out of their tipis and deliver their arms. About twenty worthless pieces had been surrendered, while fully two hundred were known to be in their possession. A party of soldiers were searching the tipis for more arms. There was a growing feeling of anger among the Indians. Yellow Bird was circling about the camp, incessantly blowing a whistle made from an eagle bone, and urging the Indians to resist, possibly reminding them of their promise to Short Bull that some one should fall dead and the soldiers would be in their power. Presently he ceased blowing the eagle bone and threw a handful of dust into the air. At that moment Black Fox, a young Indian from the Shyenne Agency, fired on the soldiers, who instantly responded with a volley at such close range that their guns almost touched the Indians, many of whom fell dead or wounded. Their

survivors sprang to their feet and a hand to hand struggle followed. Nearly all the Indians had knives, some warclubs, and many had guns hid under their blankets, prepared for just such an event. While the hand to hand struggle was going on about the tipi of Big Foot, the artillery opened on the Indian camp. There was the white puff of smoke, the roar of cannon, the shriek of shot and shell, the rattle of musketry, and the screams of women and children, as they fled to the prairie for safety, followed by volleys of musketry, and the dash of cavalry, cutting them down regardless of age or sex.

In but a few moments two hundred Indians and sixty soldiers lay dead or wounded upon the battle field. Big Foot lay dead in his tipi. The men were mostly killed about his skin covered tent, the women and children were nearly all killed in flight, their bodies being scattered over the prairies for a distance of two miles or more. After the battle a gentle snow fell spreading a mantle of white over the bloody scene. Many of the Indians wounded were frozen or perished in the blizzard which followed. Two babes were found alive among the dead on the third day after the battle and were reared and educated by white officers.

The Indian dead were buried in a single trench. The Indians built a fence around the grave, smearing the posts with sacred paint from the hand of the Messiah. Among the soldier dead were Capt. Geo. D. Wallace and thirty-one of the gallant 7th Cavalry, Lieut. E. A. Garlington and Lieut. H. L. Hawthorne were among the wounded.

The first troops arrived at Pine Ridge Nov. 19, 1890. General Nelson A. Miles was in command of the campaign. Some three thousand troops were stationed at various points in the Indian country. Upon the first approach of the troops most of the Indians fled to the Bad Lands, carrying away part of the agency herd of cattle, and destroying their own homes and the homes of those who were not in sympathy with them. Under the pacific work of General Miles and his officers, most of the Indians had been induced to return to their respective agencies, and in a few hours more, at most, it was expected the ghost dance uprising would be over without a single depredation upon the whites and without the loss of a drop of blood.

After the battle at Wounded Knee four thousand Indians immediately took the warpath. The agency was attacked and serious loss was likely to result both to the whites and to the Indians, but wiser counsels prevailed on January 12, 1891, the hostiles surrendered to General Miles and the ghost dance war was over. The Indians gave up their arms and returned to their agencies. Kicking Bear and Short Bull voluntarily surrendered and were sent to Camp Sheridan, until all fear of trouble was over.

There was nothing in the teachings of Wovoka that necessarily led to war. "Do right always and do no harm to any one" was the golden rule laid down by him, and it is quite equal to that of Jesus, "Do unto others as you would be done by," or the older rule of the Chinese teacher "Do not unto others that which you would not have them do unto you." The Indians were doing no harm in their dances. True, they were expecting much and hoping for it soon, but when the spring time passed and the summer faded and the chilly blasts of autumn were again upon them and the ghosts and the game came not, their good sense would have returned and the excitement would have died out as the fires lighted under the inspiration of a former Messiah flickered and died.

Had the advice of Major McLaughlin and General Miles been accepted, or had the matter been left entirely in their hands, there would have been no bloodshed. It was the frantic appeals of the agent at Pine Ridge that brought the military. Their coming resulted in a stampede of the Indians to the Bad Lands. The foolish conduct of Yellow Bird and Black Fox brought on the wholly unpremeditated battle of Wounded Knee. They struck the match that kindled the flame of battle.

But the surrender of January 12, 1891, came very near not being the end. The Indians were quiet in their homes near the agency. Their ponies, except a few held in camp for emergency, were grazing on the buffalo grass covered plains, near by. There was activity in the military camp. The Indian sentinels signaled their chief and the Indian camp was in turmoil. There was instant preparation for battle and for flight. Boots and saddles and the assembly sounded in the military camp and cavalry and infantry moved into place for the march. General Miles had sent a messenger to the Indians to assure them, but still they were afraid, and the rumor flew that all of the women and children were to be massacred, as those

were who were at Wounded Knee. A single shot from foolish Indian or careless soldier there would have been another bloody page. But there was none. The troops took up their line of march and the Indian country was again without soldiers to make the red men afraid.

In the hearts of the Indian the principles taught by Wovoka live. The hope that the dead and the game may return, no longer exists, at least they are not expected in the spring, nor when the prairie chickens begin to fly, nor when the berries are ripe in autumn. The pipe of peace hangs on the cabin wall, and emblazoned on their hearts is the motto: "Do not fight. Do right always and do no harm to anyone." Hungry sometimes. But they are learning that the Great Spirit will listen to the music of the plow and the hoe and supply their wants, and they know that the sunshine and grass never fail, and that the cattle can take the place of the buffalo.



NATURE IMPROVED UPON

Now soon the wondrous briquet, burning bright,
Will furnish eastern homes with heat and light.
The humming factory wheels will then respond
In whirring anthem to its magic wand.
Leviathans, now rushing o'er the main,
Will feel the impetus in hourly gain,
And soon, across the plain, the iron steed
Will leap responsive to its new found speed.
All triumphs won from Nature in the fray
Which ceaselessly is waging, day by day.

THE fuel problem in North Dakota has always been one of prime importance.

For fully one-half of the year the physical comfort of our people is absolutely dependent upon an adequate supply of low priced fuel. Year by year the solution of the problem becomes surrounded by graver possibilities, consequent upon the high price charged for eastern anthracite and bituminous coals, and the rapidity with which the timber available in Minnesota and North Dakota for firewood is being consumed.

Fortunately for the dwellers in this state nature herself has, with free and lavish prodigality, furnished a satisfying answer to this insistent question, and there can be no doubt that with proper railway facilities and wise legislation concerning the cost of its distribution, the vast lignite deposits of North Dakota can furnish, for untold years to come, an adequate supply of fuel for all commercial and household uses.

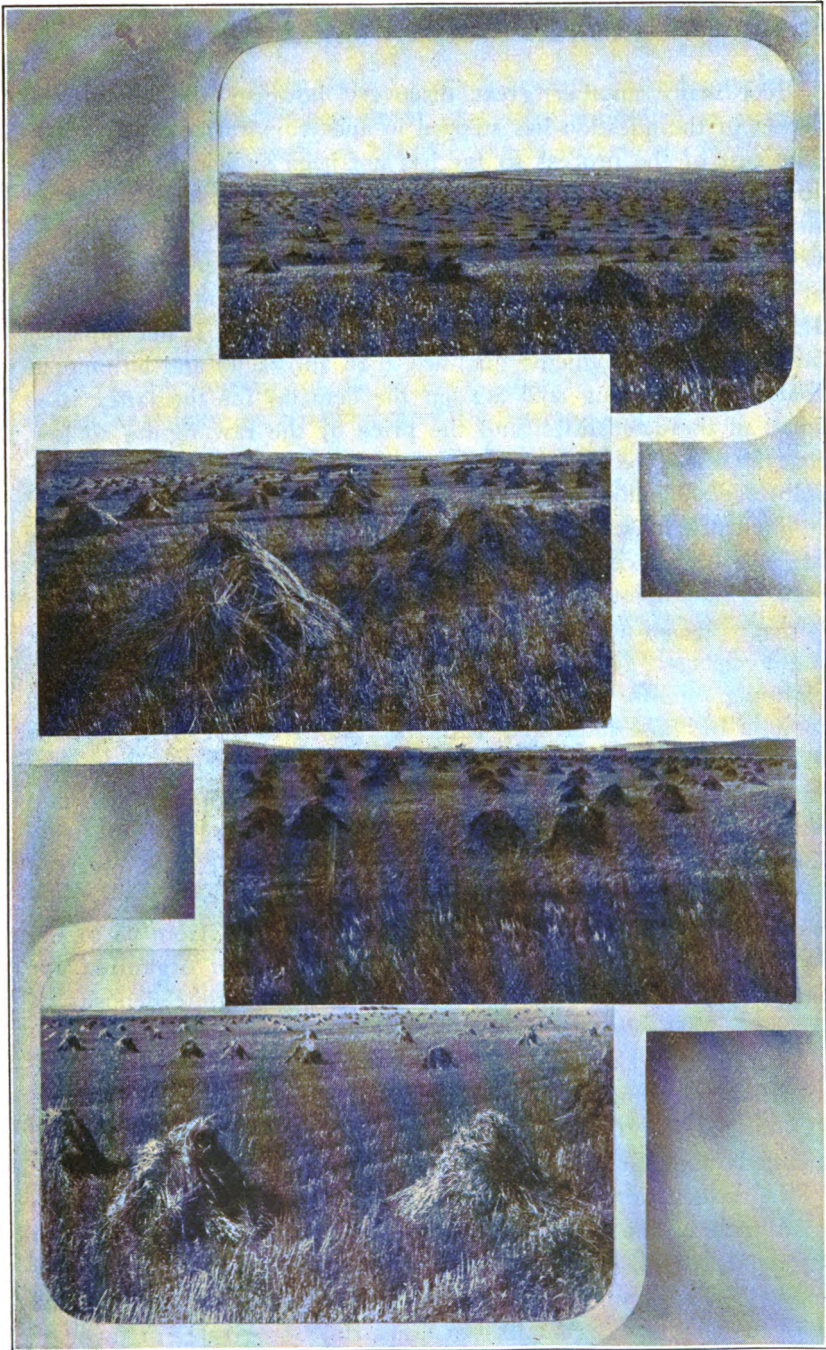
So far as the state itself is concerned the time may be said to have almost arrived when the fuel supply will be furnished from within her own borders. Already vast shipments from the lignite districts in the western part of the state to extreme points on its eastern boundary indicate the ultimate possibilities of this intra-state industry, and it is a certainty that, with the establishment of equitable and reasonable rates by the railways in conformity with

laws already passed, the fuel problem, so far as North Dakota is concerned, will be satisfactorily and completely solved.

But North Dakota has a right to expect a more ambitious commercial standing by reason of her coal deposits than any based upon the mere supply of her own local demand. With over one-third of her 70,000 square miles of territory underlaid by veins of lignite coal varying in thickness from three to twenty feet, it can be easily seen that there is a source of supply far and away beyond the needs of any population which is ever likely to be found in so purely an agricultural state.

The question then arises—how is this vast source of wealth to be utilized to the best advantage? Had our coal deposits been bituminous or anthracite in their nature the query would be already answered, for then the only obstacle would be one of transportation. Such however is not the case, and the day is yet a long way distant when the lignite of North Dakota, in its natural condition, can reach very far beyond her own borders. This is for the reason that its texture is such—causing it to slake very quickly in its natural state—that the loss from evaporation and natural disintegration will not permit its being shipped any great distance at a commercial profit in competition with the eastern coals of more stable formation. Indeed so nicely do railway rates fix the limitations of the commercial area in which lignite can be used, that it is possible, by the aid of freight schedules, to trace this line with the same accuracy as a state boundary, and were it not for other factors the value of North Dakota lignite, present and prospective, would now be definitely fixed.

Human ingenuity and science however have here stepped in and opened up such a brilliant and certain prospect of future wealth as to well nigh stagger the imagination, even of those who are most intimately connected with the industry. This in brief consists in a process, known as briquetting, whereby, through the application of extreme pressure and the consequent elimination of moisture, approximately the same heat producing power and specific gravity as are possessed by the best anthracite and bituminous coals are imparted to the lignite. The process is now an actual and accomplished fact. It is no idle theoretical dream of some impractical student, for briquets have already been made by this method, and with North Dakota lignite as the basis of the operation.



Harvest Scenes in North Dakota.

Like many another great discovery however the commercial aspect of the question has stepped in and temporarily called a halt. The cost of the process so far has not been sufficiently low as to justify entering into competition with the organized forces of the eastern industry. It is known however that lignite can be briquetted—even by the present comparatively expensive method—at the mines, and sold in the immediate neighborhood at a considerably lower price pound for pound, and with equal, if not superior, heat and steam producing qualities, than anthracite and bituminous coals are now being sold at; but the demand for the latter is so small in these localities, and the price of the raw lignite so low, that it would be poor business policy to establish an expensive plant for so limited a market.

The battle however has only begun. No great commercial change has ever been accomplished without many a set-back and disappointment. Vested interests are difficult to overcome, even if they do not institute an active opposition. Time however is rapidly working a change. The increasing demand for fuel, combined with alarming reports as to available sources of supply, have compelled thought by those interested, with the result that already a plan for utilizing the vast accretions and inferior grade coal, heretofore cast on one side as useless, has been worked out and put into successful commercial operation. This plan consists in briquetting the waste product, and the highly satisfactory results obtained have already more than justified its adoption. There are now over a dozen plants in operation with capacities ranging from 25 to 150 tons per diem, and a company has recently been organized for the erection of a plant near some of the great lignite deposits of North Dakota, which will have a daily capacity of 1,000 tons.

According to Guy Elliott Mitchell, who has an interesting article in the August number of the *Technical World Magazine*, entitled "Coming of the Coal Briquet," the briquetted article has proved distinctly superior to the run-of-the-mine coal. Says Mr. Mitchell:

"In sixteen complete test trips on the Atlantic Coast Line Railroad with briquets as against run-of-mine coal, and covering an aggregate of 1,984 miles, the briquets proved superior in every respect. The tonnage of briquets consumed was less as compared with the coal and the number of miles run was greater in favor of the briquets. The use of the briquets did away with all black

smoke, no clinkers were formed and the briquets burned completely. In these tests 172,700 pounds of coal were consumed in running 10,912 car miles, as against 161,980 pounds of briquets in running the greater number of 12,896 car miles. Reduced to pounds consumed per car mile, the figures are 15.8 pounds of coal for each car mile, as against 12.5 pounds of briquets for each car mile. With briquets furnished at the same price as coal, this would mean a saving, on the basis of the estimated coal consumption by the railroads of the United States, of 30,000,000 tons of coal annually. The greatest showing for the briquets, however, lay in the fact that it was possible to get a much hotter fire than the highest limit of the coal, thus enabling the trains to make faster time than was possible with coal, and in these particular instances to make up much lost time. To be able to accomplish this or to establish a faster schedule, the great passenger systems, as is well known, are willing to go to almost any expense.

"Other tests made by the Geological Survey in co-operation with the Chesapeake & Ohio Railroad demonstrated that the briquets ignited more freely than coal, therefore firing up quicker and making an abnormally hot fire, and when the engine was running at speed emitting practically no smoke. A heavy fire could be carried without danger of clinkering, few ashes were left in the firebox and the cinder deposit was very small, thus indicating almost complete combustion. Still further tests made in co-operation with the Missouri Pacific, the Michigan Central, the Rock Island, the Burlington, and the Chicago and Eastern Illinois Railroads—amounting to one hundred locomotive tests—show that in nearly every instance the briquets gave a higher efficiency than natural coal. For example, coal from Oklahoma gave a boiler efficiency of 59 per cent, whereas briquets made from the same coal gave an efficiency of 65 to 67 per cent. Decrease in smoke density, the elimination of clinkers and the apparent decrease in the quantity of cinders and sparks are named as the chief reasons for this increased efficiency.

"Very exhaustive tests were carried on by the Survey with a locomotive mounted at the testing plant of the Pennsylvania Railway Company at Altoona, Pa., resulting in the same story favorable to the briquet. From these tests the following conclusions have been published by the government:

"The briquets made on the government machines have well withstood exposure to the weather and have suffered but little deterioration from handling. In all classes of service involved by the experiments the use of briquets in the place of natural coal appears to have increased the evaporative efficiency of the boilers tested. The use of briquets increases the facility with which an even fire over the whole area of the grate may be maintained. In locomotive service the substitution of briquets for coal has resulted in a marked increase in efficiency, in an increase in boiler capacity, and in a decrease in the production of smoke." It is especially noted that a careful firing of briquets at terminals is effective in diminishing the amount of smoke produced. For instance, in certain of the tests the figures show an average density of smoke stated for coal at 1.7, whereas for briquets it is but .62.

"In similar tests made on the torpedo boat destroyer *Biddle*, a very great increase in boiler capacity resulted from the use of briquets, no such heat ever having been previously generated through the use of coal, the briquets consequently making possible a much higher rate of speed for the destroyer. Never before had the *Biddle* run so fast as during these briquet tests.

"In Belgium the briquet is considered a more serviceable form of fuel than coal. On the State railways natural coal is used more or less for freight service, but briquets are used exclusively for passenger service. In Germany it is stated that the briquet constitutes a fuel which can be handled and stored with greater facility and with less loss than natural coal, that the briquet is of satisfactory thermal value and that its use conserves the country's resources. In France the briquet is largely used and is purchased by the government roads under definite specifications.

"The problem of economic briquet making is not always how to make the best possible briquet; but rather how to utilize available materials, both coal, slack and binders. There are various grades of briquettable coal and many kinds of binders. The cost of manufacture should be about 40 cents per ton; the cost of binding material varies from 20 cents to 90 cents per ton of briquets produced. The government's experiments and investigations show that when plants are situated so that it can be obtained, the cheapest binder is the heavy residuum from petroleum. This binder is available in large quantities in the southwest, where the oil has this

heavy asphaltum base, and costs from 45 to 60 cents per ton of briquets produced.

Second in importance comes water-gas tar pitch, also a petroleum product, and costing from 50 to 60 cents.

Third comes coal tar pitch, derived from coal and therefore widely available, varying in cost from 65 to 90 cents per ton of briquets. Other binders which may compete under favorable local conditions are by-products from wood distillation, by-products from sugar factories, wax tailings, pitch from producer gas, magnesia, starch, and waste sulphite liquor from paper mills, the last two, however, while cheap, not making water-proof briquets.

"To find a suitable briquetting process for American lignite, such as obtains in Germany, would be a great achievement. Lignite is a low grade coal, the youngest, geologically, of the coals, anthracite being the oldest, and is found over vast areas in the west—upwards of seventy-five million acres. The Geological Survey has just established a huge machine at Pittsburg for experimenting in producing lignite briquets by simple pressure. It has been demonstrated that lignite used in a gas producer has greater heating energy and value than the best Pocahontas coal under an ordinary steam boiler, so that if the Pittsburg briquetting experiments prove successful they will open up a great new field in the Dakotas, Montana, Wyoming and Texas, where lignites abound but which have heretofore been considered of little and only local value by reason of the tendency of this coal to crumble and slack when exposed to the air.

"Briquets vary in size and shape from those approximating an egg to those considerably larger than a common brick. The small briquets burn better but the large blocks are cheaper to make and are convenient for storage. The French naval estimates show that ten per cent more in weight of briquets can be stored in a given space than of lump coal, and the British Admiralty reports give an even higher percentage.

"The principal briquetting plants in the United States today are: one in New Jersey, having a capacity of 100 tons a day; one in New York with a capacity of 120 tons a day; two others in New York with a capacity of 100 tons a day each; a Philadelphia plant, with a capacity of 90 tons a day; a plant in Scranton, Pennsylvania; a plant in Oakland, California, with a capacity of 85 tons a day;

one in Stege, California, which undertakes the manufacture of briquets from a manufacture of peat and California crude petroleum, and gives promise of using California oil as a domestic fuel; a plant in Clifton, Arizona, with a capacity of 25 tons a day; one in Del Ray, Michigan, with a capacity of from 100 to 150 tons a day, utilized for domestic fuel for Detroit. One recently organized company contemplates a plant convenient to some of the great lignite deposits in North Dakota, with a daily capacity of 1,000 tons."

Thus it will be seen that the briquetting industry is in a healthy and hopeful condition. The commercial objections to its successful maintenance are being gradually but surely overcome. In the east it may be said to be solidly established on a sound business basis. In the lignite field and especially in North Dakota, capital, brains and energy are working steadily towards the desired end. It is asserted that the Belgian briquetting machine, improved by further patents, is capable of making a briquet which will hold its shape until consumed with no other binder than that contained in the coal itself, and at a cost which will make the manufactured article a dangerous rival on the markets of the world with the best steam coals of Cardiff, Virginia and Pennsylvania.

Mr. E. A. Clark of Los Angeles, who is interested in some 30,000 acres of lignite coal land in North Dakota, has constructed a machine weighing forty-five tons, embodying the principles of the Belgian process, and operated by a mechanician from Belgium. A car of North Dakota lignite has been shipped to Los Angeles, and if the experiments now being conducted turn out as is confidently expected the lignite problem of the state will have been solved and the commercial stability of a vast industry permanently established.

EDUCATIONAL ADVANTAGES OF NORTH DAKOTA

THE first question asked by the intelligent and desirable prospective settler, after he has satisfied himself concerning soil and climatic conditions, is—How about your schools?

To this query North Dakota can give a most satisfactory answer. In proportion to its area and population this state offers the very best educational opportunities in all the northwestern commonwealths, and its permanent school fund is larger, proportionately, than any of the others. This latter now amounts to \$12,400,000 (December 1908), and the amount of revenue derived therefrom and distributed to common schools in 1908 was \$545,814. the total distributed during the past six years reaching the splendid total of \$2,504,909.

The enumeration of children between the ages of six and twenty years in 1907-1908 was 143,227; the number of schools in 1908 was 5,490; these figures indicate that there is a school provided for every 26 pupils of school age. These schools are taught by 7,113 teachers, which would give one teacher to every 20 pupils.

As stated in the June number of the North Dakota magazine the total amount expended for the support of the public schools in 1908 was \$4,372,270, derived from the state tuition fund, interest from the state permanent school fund, incomes from lands leased for hay and pasturage, from the one mill state and two mill county tax, and from local levies made by school district boards. The above facts and figures are again mentioned here for the purpose of showing the soundly permanent nature of the provision made to support and maintain our public school system.

Such has been the tremendous growth in population of some of our western counties that it has, at times, been extremely difficult to keep pace with the insistent demands for new schools. Now, however, that the organization of these counties has been accomplished these troubles may be considered of the past and, with all branches of our educational executive working harmoniously together in the future, as they have in the past, the school situation

in North Dakota indicates a continuance of its present healthy prosperity and a glorious promise for the years to come.

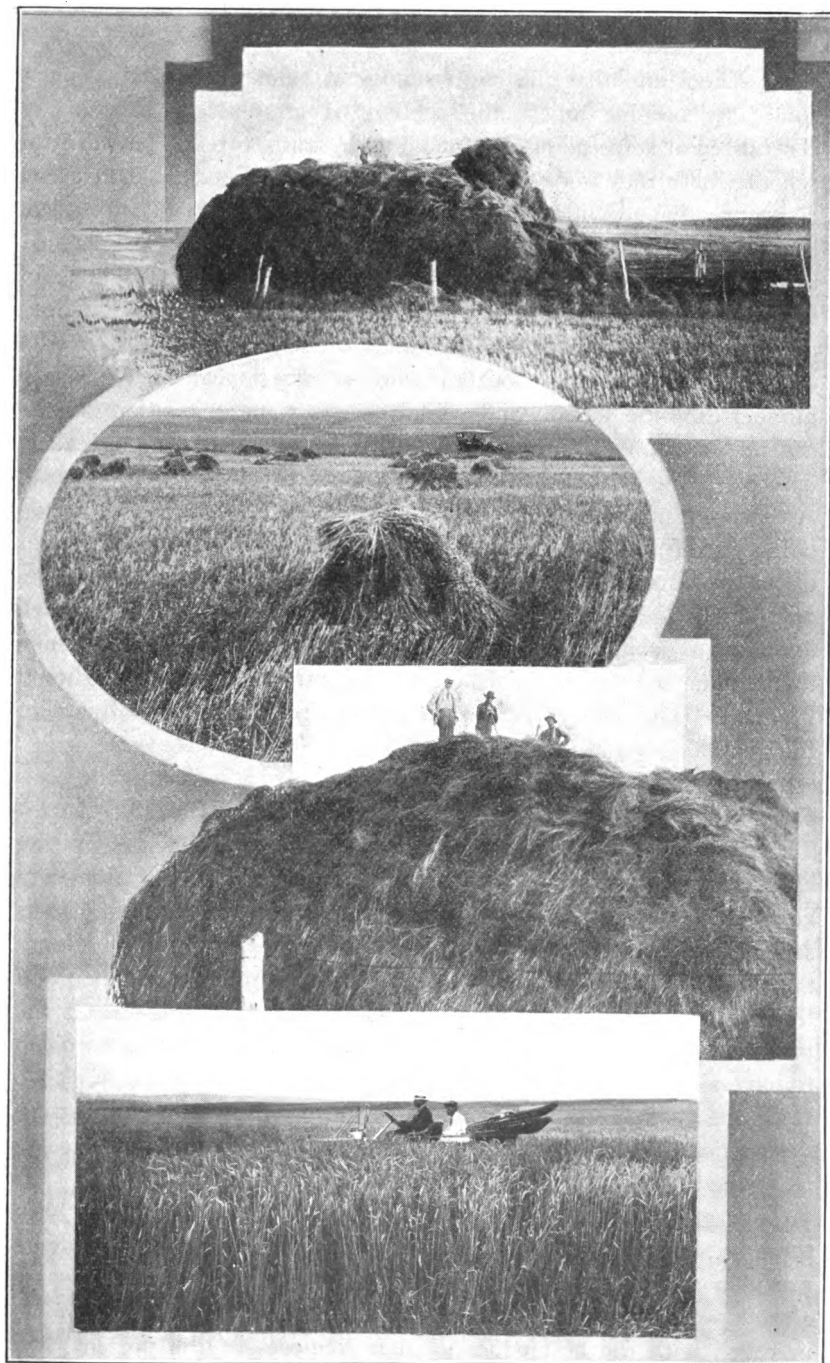
Of the schools themselves, both rural and urban, it may be confidently asserted that they are the equal of any in the land and far superior to many. Profiting by the experience of older states our state department of public instruction, working in conjunction with the county superintendents, has early grappled with the difficult problem of maintaining the rural schools in the same condition of continuous and equable progress as obtains in our city institutions, and the success which has been attained in this endeavor is an additional guarantee that the prospective settler in our agricultural districts need have no fear that the education of his children will not be amply and efficiently provided for.

As indicating the attention which is being given in this state to the country school, the following remarks of State Superintendent Stockwell, in his last report to the governor, are pertinent and corroborative. Says Mr. Stockwell, under the caption "Improvements in Rural School Buildings:"

"The influence of the school directors' meetings, and the constant efforts of the state and county superintendents is showing itself in greatly improved school buildings. The plans furnished by the department are being used quite extensively. The lighting of rooms is receiving attention and no school board now thinks of erecting a building without making special effort to see that the arrangements for heating and ventilation are proper. Modern systems of heating and ventilation, such as the Manuel Smith, are being installed in an increasingly large number of school buildings each year. This is well. No school board or school officer can consider his duty performed until the best possible conditions obtain in every school in North Dakota. It is little short of crime to compel children to sit for hours each day in rooms unfit for human habitation as is sometimes the case in our state, and we are glad to bear testimony to the fact that people everywhere are beginning to understand more and more the importance of wholesome surroundings and proper environment. Let the good work go on"

Again referring to consolidation of rural schools the following occurs:

"Henry Wallace, a member of President Roosevelt's commission on country life, says that the key to the solution of the problem of bettering conditions of country life is the improvement of the



How We Do It in North Dakota.

rural school and that the rural school will never be what it must some day become unless the schools of an entire township are centralized at some point and the children transported to this central school where they may enjoy the benefit of a school equal in every respect to that provided for the children of the town and city. We heartily agree with Mr. Wallace and are glad to make note of the fact that North Dakota is leading the northwestern states in this particular. There is scarcely a county in the state that does not have some form of consolidation of schools or transportation of children to centrally located schools. Each year sees a larger number of these schools and while there is some opposition yet the central school is coming much faster than many people realize. There are one or two cautions which ought to be observed, namely: A thorough understanding of the question ought to be insisted upon before determining the question by vote. Again, six miles ought to be the outside limit which a child should ride in a conveyance, one hour is long enough, and in cases where children reside at such distances as would make the route eight or ten miles long to include them, some other arrangement than the general conveyance should be made. The legal provision in no way restricts transportation to the general conveyance.

"During October, 1907, we had the pleasure of assisting in dedicating the central school in Sheyenne township, Richland county. There is not to be found anywhere a better example of cooperation on the part of an entire township with reference to education than right here in Sheyenne. These good people rally around their school in a manner that is really fine. Besides having a good building they have learned that it pays first to employ a good teacher and then it pays more to keep her. Anyone who is discouraged over the progress of the rural school need only to go to Sheyenne township to have all fears removed."

Of the graded and high schools no more truthful or illuminating description could be given than by quoting yet another excerpt from the same report. Mr. Stockwell says:

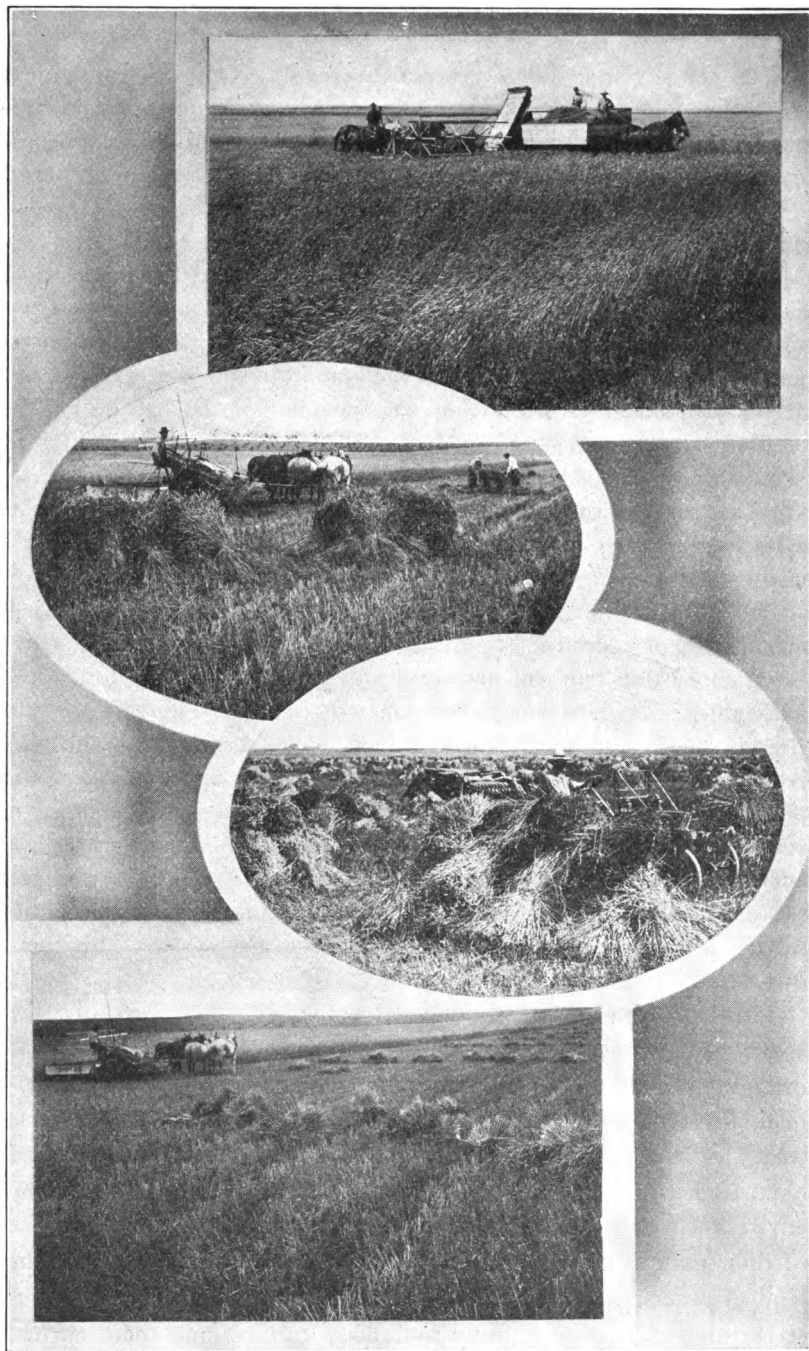
"The graded and high schools of our towns and cities rank with the best to be found anywhere. The principals and superintendents are men and women of thoro training and scholarship. They are alert, up-to-date and constant in their efforts to keep their schools in touch with the best educational movements of the present day. The people in these communities demand the best, are satisfied with nothing less and without a murmur pay the bill."

The state is splendidly equipped as regards facilities for higher education. Elsewhere in this magazine will be found brief historical descriptions covering the scope and work already accomplished by these institutions, so their name and location need only be noted here. They are: The State University at Grand Forks, the Agricultural College at Fargo, State Normal Schools at Valley City and Mayville, State Normal and Industrial School at Ellendale and School of Forestry at Bottineau, this latter being the only institution of its kind in the United States. In addition to these there is an excellent school for the deaf and dumb at Devils Lake, for the feeble minded at Grafton, and for the blind at Bathgate.

Thus within the state itself can be found the opportunity of acquiring a finished education in almost any branch of human knowledge, and the patriotic North Dakotan need not cross the state line in order to become learnedly informed on every ordinary academic subject.

So the question which the thoughtful homeseeker asks when considering the desirability of locating here is capable of a most satisfactory and truthful answer. Our educational institutions are all right. They are adequate, sufficient and fully abreast of our present needs and our system is such as to permit a definite and ready expansion in response to the ever growing needs of the community. Our institutions are protected by liberal endowments and strong constitutional provisions, and our enlightened legislatures are ever ready to strengthen them whenever needed. They are under the executive direction of competent, learned and enthusiastic educators, who have imbued the whole educational system with their own self-sacrificing ardor.

Then to all seekers for the ideal home we say, come. To the weary who would be at rest; to the toil-worn automaton who is dragging out a mechanical existence in the service of some money-mad, dividend-hunting corporation; to the despondent and heart-weary; to the young men and women who are seeking an enlarged opportunity, and especially to the man of family who seeks a healthy environment wherein to raise his offspring to the fullest exercise of their natural powers; to all of these we say, come. Come to the land of peace and plenty where, far removed from scenes of former strife and unhappiness, mind and body can resume their normal functions and regain strength and happiness in the midst of inspiring physical, social and educational surroundings.



Harvest Fields in North Dakota.

LIVESTOCK IN NORTH DAKOTA, PAST AND PRESENT

THE State of North Dakota seems to be especially suited for the successful breeding and maturing of live stock of all descriptions.

In the old territorial days, when the prairie land was practically untouched by the farmer's plow, horses and cattle were able to live and thrive on the rich native grasses which grew in sufficient quantities even in the driest seasons. In the western part of the territory in the average season both horses and cattle lived and waxed strong without shelter or artificial aid of any kind the year round. East of the Missouri river it was the custom to cut enough prairie or slough hay during the summer to feed the stock during the winter and this plan very generally brought the animals through to the following spring in fair condition. These rough and ready methods, however, had their serious drawbacks, especially in the western counties, where an exceptionally severe winter often proved more than the horse or bovine kind could endure, and heavy losses were frequently sustained.

But during the last decade, however, a rapid and lasting change has been in progress. This period has marked the passing of the old cattle and horse ranchman. The inevitable and irresistible advance of the agriculturist has so encroached upon the vast areas of free range which existed heretofore as to compel the abandonment of the old-time methods of stock-raising, and force the rancher either to abandon the industry or otherwise to make his ways conform to the changed conditions.

That the effect of the farmer's advance has been to cause a change of method rather than a withdrawal from the industry is proven by the fact that more cattle and horses of better quality are now bred and raised in North Dakota than ever before. This has been accomplished by successful and intelligent cultivation of forage crops of various kinds, such as timothy, bromus inermia, red-top, millet, alfalfa, etc. etc., and by more careful and systematic conservation of summer pasturage. Of necessity also this shrinkage of the free

pasture area has brought about an improvement in the quality of stock raised, for the progressive horse or cattle breeder does not care to feed and shelter scrub animals, when the same amount of care and fodder will bring to a marketable age a full blood or high bred creature.

Twenty years ago when a four year old steer or horse could be reared to that age for an almost nominal sum, by the free hay and pasturage method, the herds of the state were plentifully sprinkled with runty, unthrifty horses and cattle, whose low price on the market was only profitable to the owner by reason of the correspondingly small cost of production. It can readily be seen that under these circumstances range cattle and horses were the first to feel the effect of any market depression, sudden or prolonged, and the margin between profit and loss was often hazardously narrow. Add to these unfavorable conditions the heavy loss sustained by stockmen in the western part of the state when an exceptionally hard winter upset the general average upon which all ranching was based in those days, and it becomes apparent that both the state as a whole and the rancher as an individual are to be congratulated upon the altered conditions.

But now, in many parts of the state, a complete change has already been accomplished, and even in the extreme western portion old-timers are rapidly abandoning the old ways, and one of the most important of our industries is fast assuming a solid and assured position by the adoption of sane, progressive and business-like methods. The sheltered side of a bluff or the uneven bottom of a wind-swept gully have been replaced, as the only available shelter on stormy days, by well-built and hygienic barns, wherein thrifty and well-bred stock can contentedly assimilate the nutritious timothy or alfalfa, oblivious of the stinging cold or storm without. Broad fields of fragrant clover and waving oceans of timothy and other prolific forage crops have taken the place of the scant half-ton-to-the-acre crop of wild hay which constituted the winter ration of earlier days. Ensilage and roots are also being used extensively. Feeding barns are being established in suitable localities, and scientifically fattened beeves and sheep are rapidly replacing the inferior product of a few years ago.

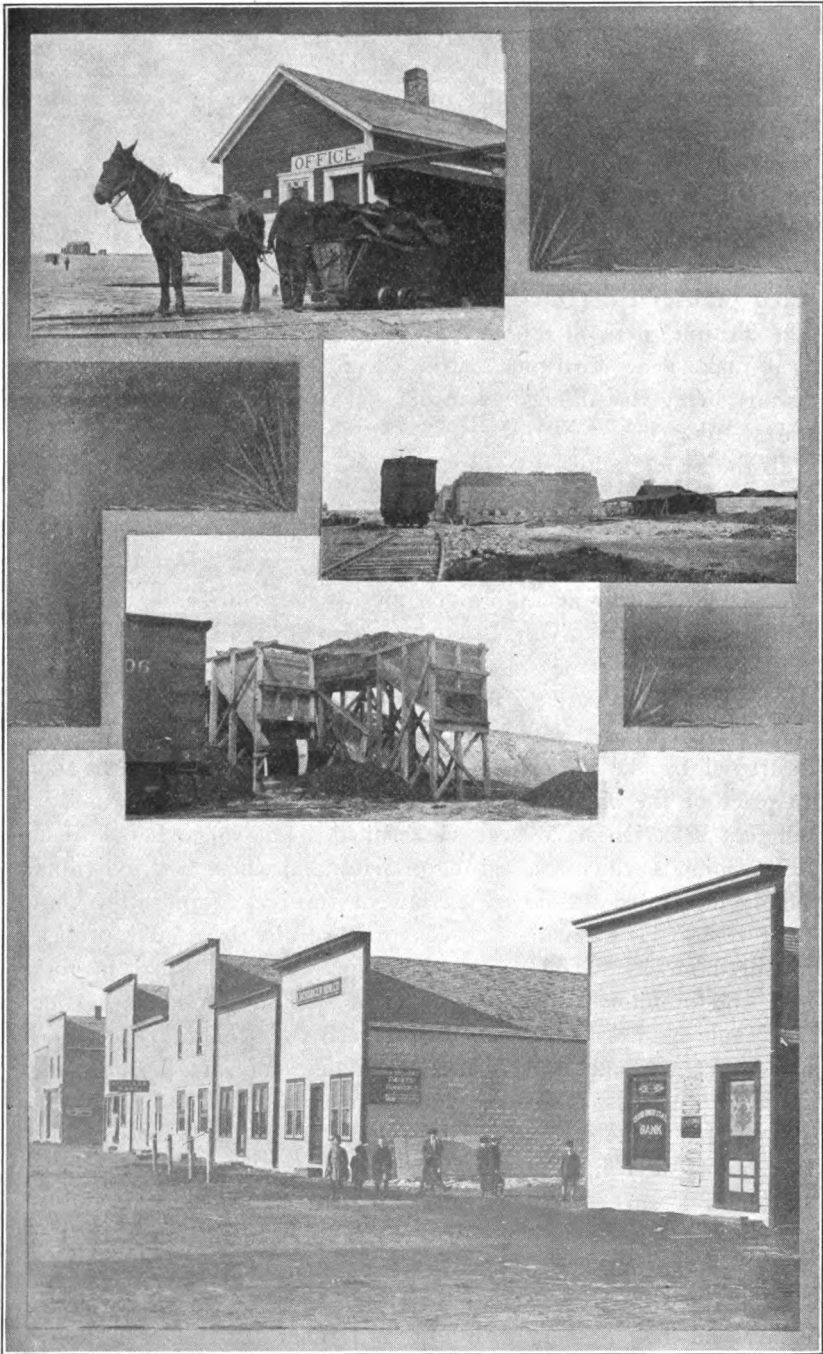
In the sheep industry also the same elements of change have been ceaselessly at work. Careful selection of breed and type have worked

wonders. The leading strains of the best wool and mutton producing sheep of European countries are now well represented in our North Dakota flocks. This intelligent and aggressive policy of our flockmasters is fast bringing the state product to the top of the market and, as with the cattle and horse business, the beneficial results can be clearly traced to the rapid settlement of heretofore uncultivated prairies by a thrifty and energetic agricultural population. The altitude, general topography and climate of the state is such as to make it an ideal one for the sheep industry, a very favorable feature being the absence from our flocks of that scourge of other states—foot-rot.

In the swine industry North Dakota has always been well to the front as regards the quality of its output, and here again it is noticed that some peculiarity of soil or climate has favored the state for hog cholera, which has decimated the great swine districts of Iowa, Illinois and other states, is here altogether unknown. Our breeders have always been keenly alive to the value of blood and breeding, and the state's shipments are eagerly sought for by the packing houses of the west and middle-west.

So it appears that instead of the stock industry being injured or destroyed by the spread of agriculture, the contrary is the fact. In place of the haphazard methods of former days system and intelligent selection have been established. The large herds of inferior animals which roamed the prairies, and whose best individuals simply illustrated the unwritten law of survival of the fittest, have been replaced by smaller droves of carefully bred and properly nurtured stock, which, in the aggregate, nearly equal in numbers and infinitely excel in quality the old time nomadic rustlers. The same land which formerly produced the scanty, if nutritious, native grasses, which furnished sustenance for long-horned range cattle, now yields, under the careful cultivation of the farmer, an abundance of the richest fodder, which, when fed scientifically to the animal best fitted for its assimilation, brings to the modern stockman a sure, profitable and adequate return.

Thus, instead of looking back with regret to the romantic days of the picturesque cowboy and his semi-wild charges, the frontier saloon, the round-up and all their wild west adjuncts, we should rather hail their passing with a sigh of relief and rejoice in the rejuvenation of a great industry and its establishment upon a firm, common sense and business-like basis.



1. Coal Mine. 2. Brickyard. 3. Coal Chutes. 4. Business Portion of Scranton.

NORTH DAKOTA ALONG THE LINE OF THE CHICAGO, MILWAUKEE & PUGET SOUND RAILWAY

Since the advent of the Chicago, Milwaukee & Puget Sound Railway through Adams and Bowman county, the settling of the adjacent country to this line has gone on with such rapidity that it is hard to believe that a little over two years ago a few ranchers and homesteaders were the only inhabitants of this vast territory.

At the present writing practically all the land for from ten to twenty miles on each side of the railroad is now being occupied by a vast number of new settlers attracted to this country by its fertile soil and great opportunities offered in the numerous new towns.

North Dakota, like Minnesota, and other western states, has to contend with the effect of a great number of false impressions circulated about it. Because the lands were cheap wheat raising on a large scale, which made the state notable for its bonanza farms, for a period monopolized the cultivation of the soil of practically the entire state. Because the farmers did not diversify their farming the supposition got abroad that wheat was practically the only thing that could be raised. The western part, especially the southwestern, was supposed to be good for cattle raising only, but since the entrance of the railroad into this section of the state the false impressions circulated have been corrected to a large extent. At present large crops of wheat, macaroni, oats, speltz, barley, millet, corn, flax, clover, alfalfa, sugar beets and all kinds of vegetables are raised. In fact there is very little difference now between the crops raised in southwestern North Dakota and Iowa and Illinois.

The soil in this section is a chocolate colored volcanic ash, with a clay subsoil and is unusually rich. Oats on this land will average as high as 72 bushels on second breaking, wheat 32 bushels and flax 16 bushels. Flint corn is successfully grown and the dent variety makes a very satisfactory showing.

The lands not under crop are mostly covered with buffalo grass, which cures on the stem and makes the best of hay, and has produced the fattest cattle ever marketed. In fact this country, until the coming of the railway and homesteader, was known as the "Rancher's Paradise." From roundup to roundup the grass had sustained the herds in winter and fattened them in the spring and summer.

The climate could not be improved on to any great extent. Stories have been told of extremely cold winters and dry summers, but if one will consult the government reports he will find that climatic conditions here are quite similar to those of the most thickly populated eastern states. The altitude gives this country a pure healthy mountain air and is a cure to sufferers from catarrh, asthma, and all bronchial afflictions. In summer the days may be quite warm, but one is always assured of cool nights. Cattle, horses and sheep range the prairie, summer and winter, without shelter.

The rainfall in this section is amply sufficient for the growing of crops. For the past fifteen years there has been an average rainfall of sixteen and one-half inches annually and this chiefly in May, June and July at the period when most needed. This is a sufficient amount considering the way the soil holds the moisture. In the driest part of the past summer one could sink a spade and find plenty of moisture for any crop. The snowfall, while not exceedingly heavy in the winter, is sufficient to prepare the soil for spring work.

Throughout this country a good grade of lignite coal is to be found in practically all localities and is to be had for the digging, or at a cost of from \$1.50 to \$2.50 a ton if delivered. This coal is of very good quality and compares well with the average soft coal generally used. A great many local coal mines have been started up and are doing a big business, finding excellent markets in the adjoining towns and quantities are shipped to points east and west along the new line. The government has made a number of experiments in making this coal into briquets and so far have been very successful.

Good water is easily obtained at from ten to sixty feet and a plentiful supply for all uses is assured for all time.

In many localities excellent fire clay is found which can be made into a good quality of fire and pressed brick. Native cement mixed

with sand furnished plaster for all uses. Here are found ideal locations for the manufacture of these necessary articles for building and other purposes.

Lumber for building can be bought as cheap as in any state.

No state has been more liberal in providing educational facilities for the farmer's children than North Dakota. Whenever there are nine children more than two miles from an existing school, an additional school may be organized and a teacher employed; where there are twelve children thus situated a school house must be built for their accommodation.

There is still government land to be had subject to homestead entry but it is going fast and it is hard now to find a good quarter section within 10 or 15 miles of the railroad which has not been filed upon. Generally speaking good land can be bought at from \$5 to \$10 an acre, although best locations range from \$15 to \$25 an acre. Improved lands cost from \$25 to \$35 an acre and some of these are bonanza farms which have made fortunes for their owners who now wish to retire. Now that diversified farming is becoming the rule some of the immense farms can be divided into a number of smaller ones.

In passing through this country on the train it is hard to believe that a little over two years ago this was a vast prairie. Now you will find towns varying in size from 300 to 800 people at intervals of 15 to 25 miles. Their growth has been phenomenal, but will continue, as the rich country around is well able to support them.

In most of these towns the main streets have been graded and graveled and in many instances cement sidewalks have been laid. The towns are all supplied with good water from driven wells which is used for all purposes.

These towns are mostly well supplied with stores and business houses of all kinds, but on account of their continued growth offer exceptional opportunities in all lines, such as banks, lumber yards, grain elevators, hotels, hardware stores, general stores, livery and feed stables, millinery, harness shops, implements, butchers, bakeries, tailors, doctors, lawyers, real estate agents, etc.

Most of these new towns have long distance telephone service and many are now installing local exchanges, and it will not be long before electric light service is installed.

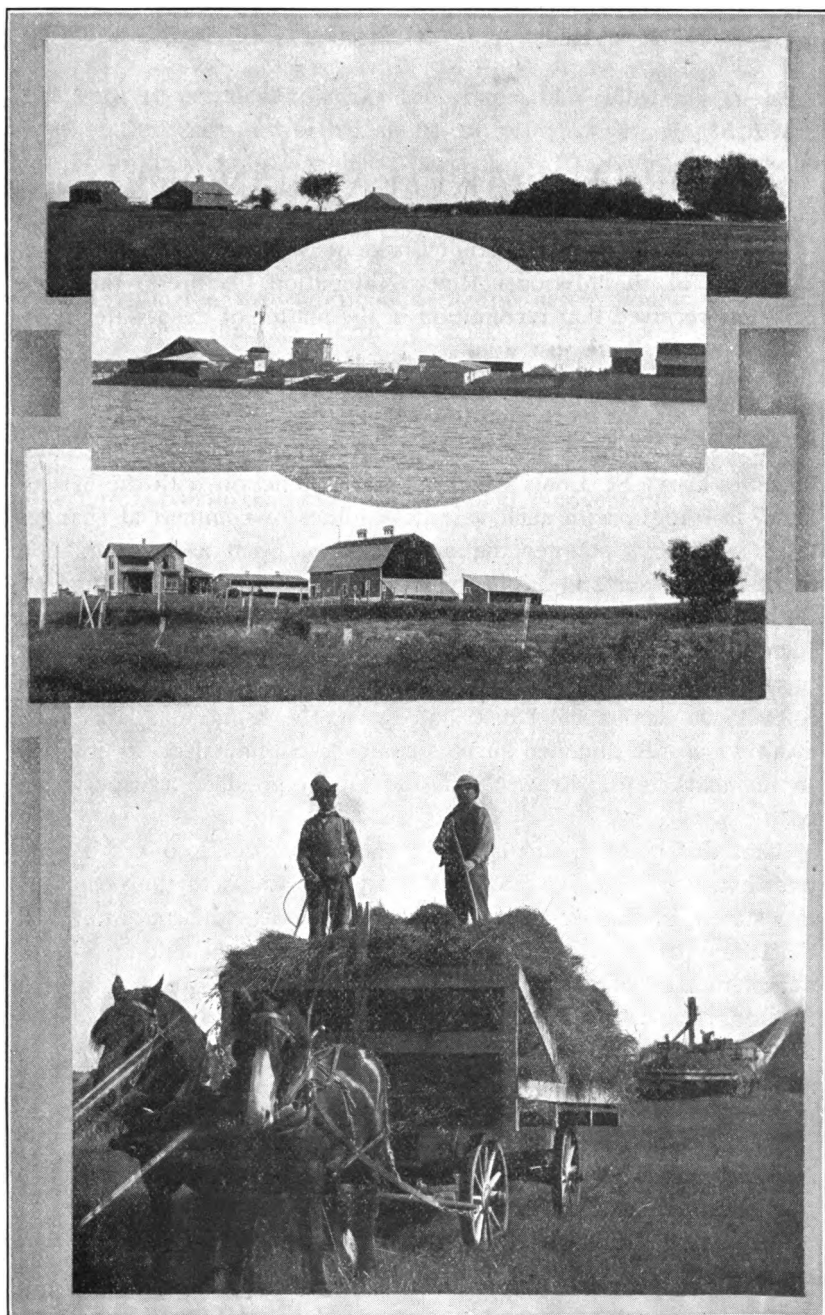
Churches and society organizations are well represented.

As a matter of fact these new towns afford nearly all the conveniences to be had in the larger cities.

It will not be long before this section of North Dakota will have numerous other lines of railroads running through it which will still more increase its already rapid growth, and it would be well for those who are considering moving west to take a trip out into this country and see for themselves the many advantages offered there and the great possibilities of its future.

SUNSET IN DAKOTA

The sunlit day now draws toward its close,
And weary nature welcomes night's repose.
The sounds of busy toil no more are heard,
And travelers, greeting, pass the evening word.
No more the whirring reaper's monotone
Now near, now far, pours forth its rhythmic drone.
From out the workshop of the fertile plain,
The toiler gladly seeks his home again.
Toward the farmstead drift the lowing kine,
Seeking the bubbling spring in straggling line.
The feathered songsters cease their evening lay,
In silent homage to the passing day.
All sentient nature feels the call to rest,
Time-hallowed curfew from the reddening west,
Where glowing richly through the cloud-flecked sky,
The sun, in gorgeous radiance bids Good-bye,
And slowly sinking out of human sight,
Lets fall the canopy of restful night.



DICKEY COUNTY.

1. Farm View. 2. Lake View Farm. 3. Farm View. 4. Gathering
in the Sheaves.

NORTH DAKOTA HONORED

BY the selection of Governor Burke of North Dakota to be president of the Missouri River Navigation Congress, the state has received that recognition in the matter of deep-water navigation, which is its just due.

To no state through which the great river flows is the matter of its navigability of more vital importance than to North Dakota.

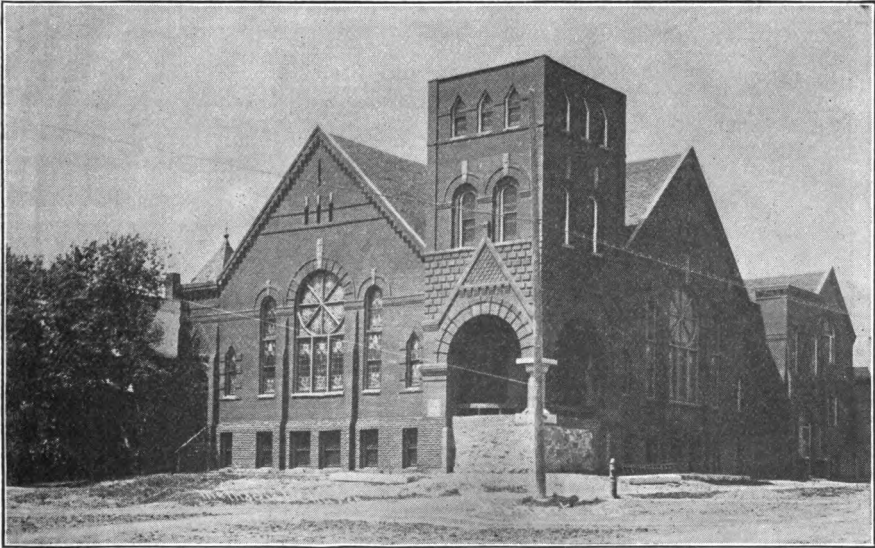
An assured minimum depth of six feet from Benton to the point 25 miles above St. Louis which marks its junction with the Mississippi, is fraught with such vast possibilities of commercial changes as to well nigh stagger the imagination. Such a consummation might very well and probably would mean an entire change of outlet for the major portion of the spring wheat crop. This in turn would necessitate the creation of a new, or the enlargement of the old facilities for milling the wheat at some point from which it could be economically distributed over the country at large, and from which the unmilled surplus could be continued on its journey to the markets of the world at the lowest possible transportation cost.

That this point would be the great city of St. Louis is beyond question, nor need that fact cause any uneasiness to the people of this state. It should rather be a source of universal congratulation that the prospect of securing a trust-proof, permanent and economical method of marketing the state's products is so bright. Situated as that city is in the geographical center of the Union, being a natural point of convergence for a national railroad nucleus, and especially because of its location immediately below the confluence of the two main channels of delivery by the water route, it is ideally placed for the most rapid and economical handling of the immense traffic which would inevitably follow the creation of a six-foot waterway.

With such a market to which the grain and other produce of North Dakota could be shipped at a minimum cost, only the construction of feeder railway branches to river points would be necessary in order to secure a perfect system of farm to market delivery, and

it is entirely practical to make the system of gridironing on both sides of the river in North Dakota conform to the changed direction of produce outflow which a deepening of the waterway would bring about.

Thus the choice of North Dakota's Governor for president of the Congress has an added significance when considered in connection with the avowed objects of the association. It means, without doubt, that the fertile prairies of this state, with their immense potentialities for wheat and other grain production, have been recognized by the majority of the congress as the big, main objective point of upper river navigation, and in no better way could the recognition of this fact be announced than by placing the governor of North Dakota at the head of the movement.



McCabe Methodist Church, Bismarck, N. D., Nearly Completed.

DOWN THE MISSOURI TO DIXIE

(Air: "Marching through Georgia.")

By Joseph Mills Hansen.

BRING the steamboats back again,
We want them here once more
Running on the river
As they did in days of yore.
Loaded with the riches of
The prairie and the shore,
Down the Missouri to Dixie!

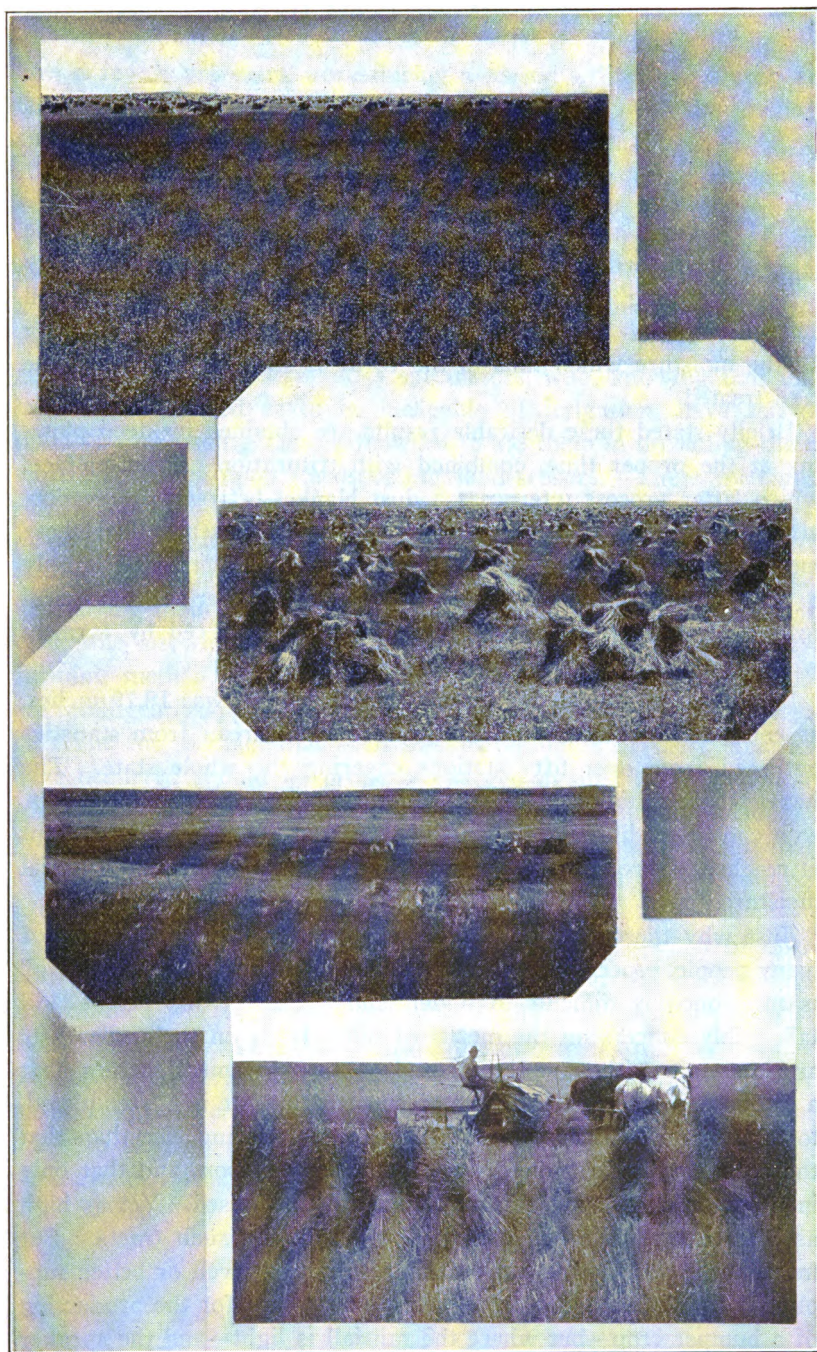
Chorus—

Hurrah, hurrah! Our hopes will not be vain!
Hurrah, hurrah! Fort Benton to the main!
So we'll make the channel deep,
For commerce and her train,
Down the Missouri to Dixie!

Here will be the highway
For the floods of wheat and corn
Poured for all earth's millions
From the prairie's golden horn;
None need want or hunger
When such argosies are borne
Down the Missouri to Dixie!

How the farms will fatten
When the packets bear their freights,
How the towns will flourish
When the river rules the rates,
How the land will prosper
From the far Northwestern states
Down the Missouri to Dixie!

Soon a twelve-foot channel
Through the bottom lands shall sweep
Plowed by stately steamers
And with barges laden deep;
New-born life and vigor
Through the Nation's veins shall leap
Down the Missouri to Dixie!



Harvest Views in North Dakota.

DRY FARMING

DON'T get scared. There is really nothing whatever to be frightened at. Everything has to have a name and "Dry Farming" is simply the name given to that system of soil cultivation which aims to and undoubtedly does conserve practically all the moisture which falls in the form of snow or rain upon the land treated.

Briefly stated these desirable results are obtained by deep plowing at the proper time, combined with trituration of the surface, which latter process interposes a dust blanket between the evaporative atmosphere and the retained moisture beneath. That these methods will insure a crop, even when the annual rainfall is only 8 or 9 inches, has been amply proven by numberless successful tests, and many a bounteous yield has been garnered by farmers who have followed these simple directions.

The average rainfall for North Dakota in 1908 was 18.79 inches, as computed by the United States Weather Bureau from statistics gathered from over fifty stations covering the whole state. The heaviest precipitation was 26.7 inches and the lowest 13.49 inches, so it can be readily seen that a liberal margin exists before the point is reached where the system might possibly fail for lack of initial moisture.

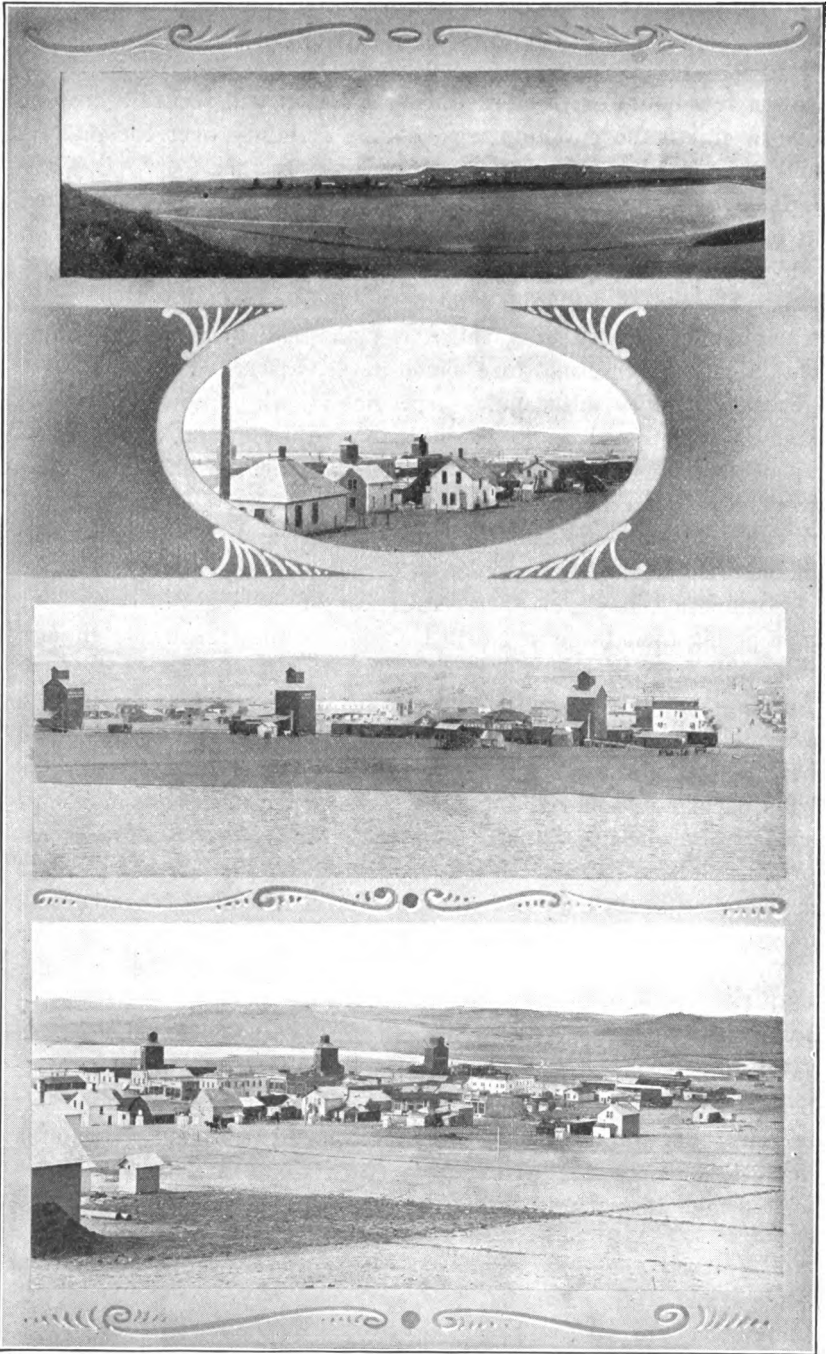
Just why there should be such a nervous dread on the part of many people, especially real estate dealers, whenever "dry farming" is mentioned is difficult to understand. These same people will talk glibly concerning the merits of other lands on their sales lists and maintain without a tremor and as an inducement to buy, that a drainage ditch is in progress of construction, or is contemplated, to take care of surplus water. This means nothing else than that the crops are liable to be drowned out every season, and that only in a season of average rainfall can a crop be raised. Yet as high as \$50 an acre is asked and paid willingly for such tracts. But mention dry farming in connection with land as well or better supplied with all the chemical constituents necessary for the production of a bumper crop—but where the rainfall is light—and the speaker is apt to be silenced or prevented in some other way from relating

how a few hours extra work during a season will secure a crop at one-twentieth the cost and with double certainty over the ditched and drained lands of some low-lying river bottom.

It is true that in some other states lands are being exploited as being favorable for practice of the dry farming methods yet on which crops cannot be raised. But this is not the fault of the system. The reason for failure in these cases is that no rain, or only a negligible quantity falls, and it is plain that no method of cultivation can conserve moisture which never existed. These lands are generally held by unscrupulous speculators, who, knowing that the land is so situated as to be incapable of irrigation, have seized upon "Dry Farming" as a catchword to aid them in unloading their worthless wares upon unsuspecting land-seekers. These men are rascals pure and simple and as guilty morally as any other swindlers of obtaining money under false pretenses.

Fortunately, however, there is no fear of this class of confidence men plying their trade in North Dakota, for the reason that enough rain falls anywhere in the state to insure the success of the dry farming method, providing the principles governing its operation are intelligently applied; nor would the subject have been mentioned here but for the fact that such so-called failures of the system as have occurred should be properly charged against these dishonest speculators who are actuated only by a greedy desire for personal profit, and who have, by selling land unfit for the purpose, created a prejudice against a tried and successful method of overcoming a certain natural condition.

So far from dry farming being discouraged or spoken of only with bated breath, its adoption generally all over the state should be preached wherever the opportunity offers, and even in the most favored districts, as regards rainfall, it is of benefit for other reasons besides the conservation of moisture, while in other parts thousands of acres heretofore deemed only occasionally productive, can be made to blossom as the rose and return abundant harvests to the wide-awake farmer.



HETTINGER, N. D.

1. Showing the Lake. 2. Residences. 3 and 4. Birdseye Views.

INTENSIFY--DIVERSIFY

SO much has been written on these two subjects, as applied to modern agriculture, that were it not for the necessity of constant repetition, in order to impress great truths on the average individual, it might be deemed superfluous to again discuss matters which have been so frequently and eloquently dealt with in the past.

Notwithstanding all that has been written and said in favor of and urging a more varied range of agricultural effort, it must be admitted that a more general practical acceptance and practice of the idea is needed before the rapid deterioration in quality of our small grain crops can be checked, and the best returns secured from the rich resources which the arable land of this state offers to the progressive husbandman.

Dollar wheat, present and prospective, offers a great temptation to the farmer who, generally speaking, is better equipped for the handling of this and other small grain cereals than he is for any other line of allied industry. The land lies ready for the plow and harrow, the seed is cheaply and easily available, the machinery for quickly harvesting and threshing the grown crop is either owned by the farmer or easily hired, and elevators, scattered throughout the state, capable of storing millions of bushels, compete for the privilege of handling the output. It is easy to understand then that it will require more than the average initiative to break away from a reasonably certain return and venture into more or less unfamiliar fields.

The rapidity, however, with which all available tillable land is being taken up, and the consequent necessity for more intensified farming and for securing the best possible returns for money and labor invested, are slowly but surely compelling a closer study of the best means of attaining this end.

The surest proof of the advantages of mixed stock, grain and dairy farming is that of all those who have branched out on these lines but a very small percentage has returned to the old one staple method, and it is certain that of the few who have so returned, poor judgment, inferior land or wrong location has been the cause in

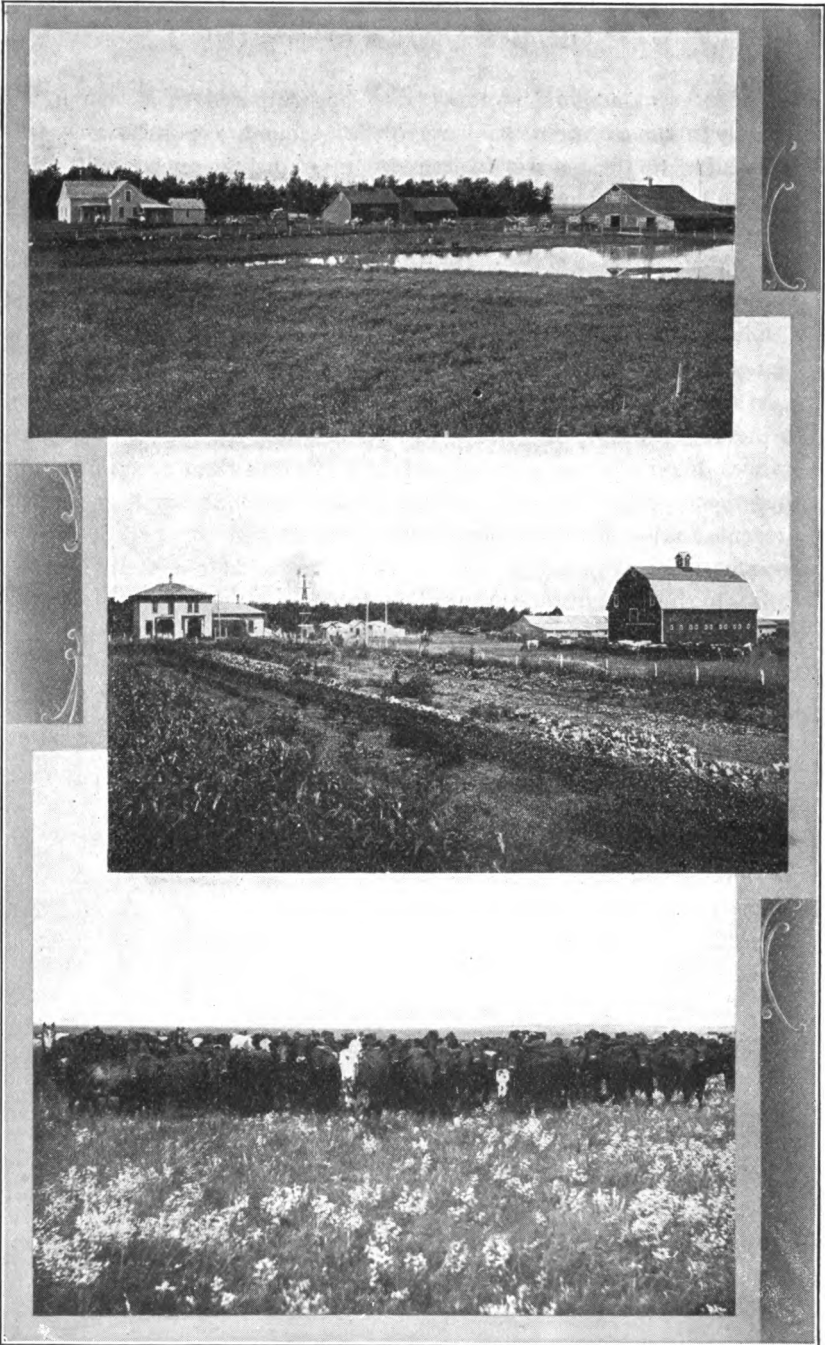
almost every instance. An additional cause, so far as the dairy industry is concerned, has been the unscrupulous promotion of creameries in undesirable districts by interested manufacturers of creamery machinery and supplies. Farmers generally, however, are now beginning to realize the necessity for exercising their best judgment and care in undertaking this latter branch of farming and, with the excellent laws passed at the last session of the legislature, a steady, healthy and prosperous advance may be expected.

Perhaps the weightiest reason which can be advanced in favor of diversification is now the clearly demonstrated fact that our land at one time thought to be inexhaustable in plant food necessary for the successful growing of wheat and other small grains, is in imminent danger of complete exhaustion by reason of the one crop mania. This brings up the subject of proper crop rotation whereby the productive properties of the soil may be preserved indefinitely. That this can be and has been accomplished is universally conceded, and it is well known that many a farmer, who is wondering why his twentieth successive crop of wheat on the same plat does not yield as formerly, could be reaping a heavier harvest than ever, had he read and acted upon the advice given him persistently for years past through the columns of our agricultural papers and the bulletins of our state agricultural experiment stations. It is an ascertained fact that the average yield of the famous No. 1 Hard spring wheat has been steadily declining for many years past, and more ominous yet is the falling away in quality which almost invariably accompanies this shrinkage in the number of bushels per acre. This is attributable to no other cause than the unwise persistence with which the land is cropped year after year to the same cereal. In referring to this subject so high an authority as President Worst, of the North Dakota Agricultural College, in his address at the Tri-State Grain and Stock Growers convention, held in Fargo last January, unhesitatingly predicted the approaching extinction of the spring wheat industry if the present system of continuous wheat farming is persisted in. Humus and other elements are absolutely necessary to produce the full yield and quality of No. 1 Hard wheat, and when these elements are withdrawn from the soil, by a ruthless sequence of one kind of crop, the quality and quantity must of necessity fall away.

The present suicidal methods may be compared to a man living lavishly upon the principal sum of his monetary possessions, wilfully blind to the future, so long as his immediate needs are satisfied, and rapidly approaching a state of complete insolvency, when by a sensible investment he could live indefinitely and comfortably on the interest. To apply this parallel the investment would be in the case of the farmer, to rotate his crops by methods solidly and absolutely established, in such a manner as to return to the soil the elements taken from it by preceding harvests.

In this present season, when the perfect climatic conditions seem to indicate a bountiful return, no matter what the previous circumstances of cultivation may have been, it is more than ever important that these well established truths should not be forgotten in the present elation over a phenomenal growth and the prospect of a bounteous harvest in the fall. No matter what the yield may be through the exceptional favors of a generous Nature, it will be found that the best results will be secured, both in quality and quantity, from the new and unexhausted land and from those few fields whose owners have practiced an intelligent rotation.

The handwriting is on the wall, and our reputation as the bread basket of the world depends upon our heeding the warning.



RANSOM COUNTY.

1. House, Barn and Lake. 2. House and Barn. 3. Cattle.

TEACH HIM HOW

THIS is an off year politically, and, barring the perennial tariff question, there is no great state or national question persistently before the public. The shadow of the election booth and thunderous platitudes of the venal spellbinder are about as distant from us as is well possible in this land where the murmur of the caucus and convention is always more or less audible.

Therefore in the least possible danger of being charged with insincere flattery, this opportunity is taken of asserting, without fear of successful contradiction that no occupation on this terrestrial footstool is more worthy, dignified, useful and independent than that of the farmer.

This brings us directly to the object of this somewhat lengthy exordium, which is to urge upon farmers and the state generally the importance of securing in our primary schools, to the sons and daughters of our agricultural population, such a course of instruction as shall best befit them for the continued pursuit of so honorable a calling and inspire them with the proper spirit of enthusiasm in their studies.

There has been in the past, and is yet, for some inexplicable reason, a disposition on the part of the country bred child to leave the farm at the first opportunity and engage in some other entirely different occupation than that for which they are fitted by birth and environment. It would almost seem as though they were ashamed of a reputable employment which is coeval with the ages, and whose honorable practice is lost in the dim vistas of antiquity, upon whose constant performance the very existence of mankind depends, and whose cessation, for but a few days, would plunge the world into misery and want.

Agriculture is advancing with great strides. The growing needs of a rapidly increasing population call for an ever increasing supply. Science and the farmer are raising the occupation to the position of a learned profession, and all that is needed to assure for all time a healthy and continuous advance is that heredity and environment should both be given a full opportunity, and that the scientifically educated offspring of the husbandman should be ready and

willing to assume, at the appointed time, the duties and responsibilities of his immediate progenitor.

This is an age of specialism. The greatest success in any given line of effort can now only be attained by the one who has made that line his exclusive study. This is recognized in all the professions and in most mercantile occupations, all of which are now divided into special areas of intensified study. The oculist, nerve specialist, alienist, lawyer, expert accountant and actuary all attest, by their specialization, the value of profound knowledge within circumscribed limits.

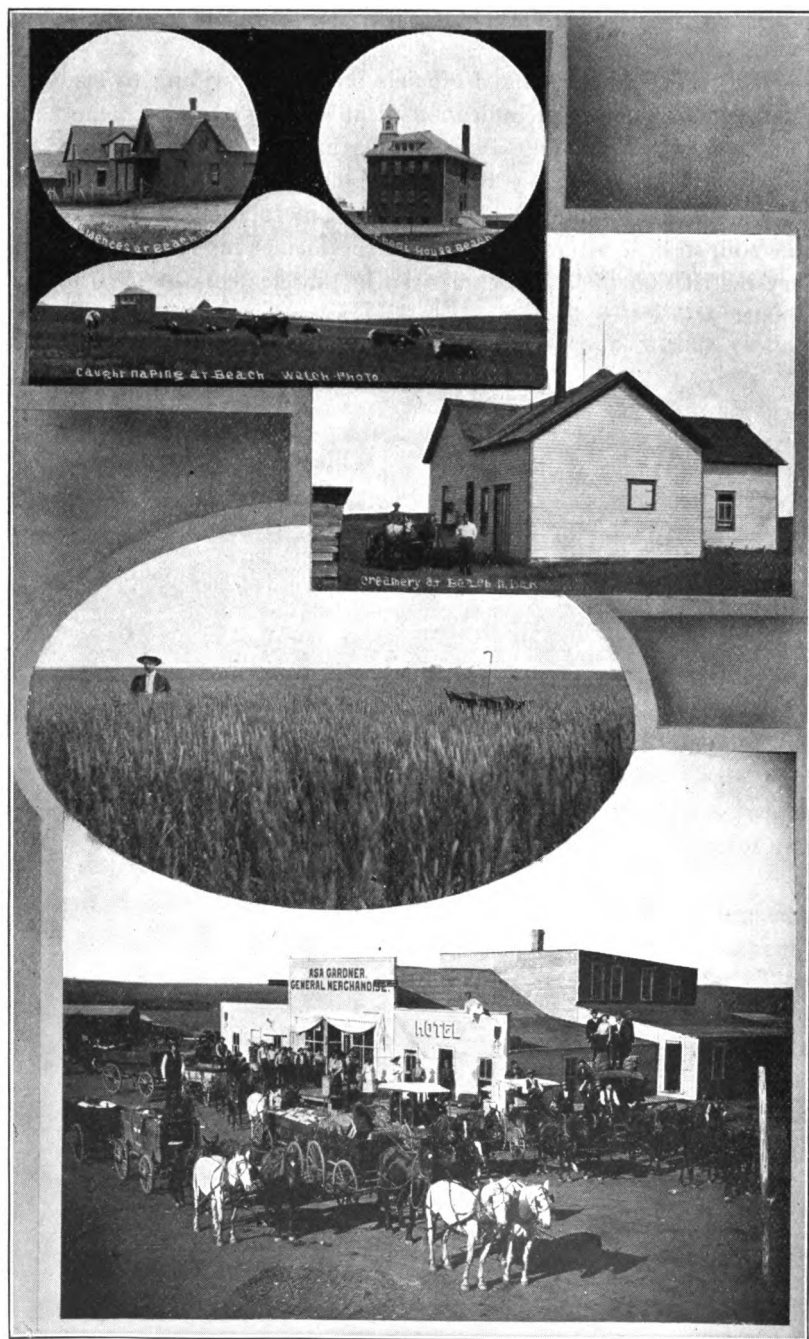
How then can the farmer expect to maintain the high standard which is being established in his own calling, unless he sees to it that his logical successor in the tillage of the soil and its allied industries is properly equipped to exercise his full, trained ability in continuation of the work begun by his predecessor?

If the education is intended to have any direct, practical value, it must be conceded that it should be given along those lines which fit a child for his future occupation. It is far more useful for a farmer's son—or any one else's son for that matter—to know how to raise wheat in scientific rotation with other crops, than it is for him to be able to narrate glibly how Julius Caesar whipped the British long before America was discovered. Yet many hours daily are frittered away in the study of equally useless subjects, which might far more profitably be spent in the acquisition of useful and practical knowledge.

These remarks are not intended in any way as an insinuation that those who are charged with the solution of our educational problems are not alive to the needs of the state in this matter. The contrary is rather the fact. But the efforts of the state and county departments of instruction to encourage agricultural education have not met with the support which they should have in so purely an agricultural state as North Dakota. In seven of the seventy-six high schools of North Dakota an agricultural course is being offered, and county superintendents and the department of public instruction are urging the teaching of elementary agriculture in our common schools. The fault lies rather with the farmers themselves, who, by their supine indifference and lack of response fail to encourage the suggestions of our public educators.

They will find our school officials more than willing to lead and co-operate on the least indication of an awakened public sentiment, but until that awakening comes the pertinent query remains a standing interrogation—is the farmer ashamed of his occupation, when in a state that would yet be a territory but for the man who plows the soil, so little attention is paid by the farmer himself to the primary instruction of his own children in the elements of its principal industry?





1. Scenes at Beach. 2. Creamery at Beach. 3. Eddy County Wheat Field. 4. Gardner's Freight and Storage Teams Leaving New England Monday Morning.

SCIENCE WINS

THE day is rapidly passing and will soon be entirely gone when the average farmer resented any suggestions as to his methods of farming, from the bespectacled scientist with the broadcloth suit and the vocabulary of strange Latin words descriptive of chemical makeup of the soil.

Bitter experience by the farmer and successful experimentation and logical proof on the part of the scientist have convinced the former that, after all, there is something in chemical analysis and bacteriological research. The agricultural laboratory has won out, and the farmer is now ready to admit that his best friend is the indefatigable student of plant life and soil composition, who has been furnished the means by an enlightened state legislature for wresting mighty secrets from Dame Nature and offering them to the tiller of the soil for the mere asking.

A notable example of that which can be accomplished by a thoroughly scientific study of a given subject is presented in the history of alfalfa culture in this and other states.

Ten years ago the farmer would have deemed the man crazy who suggested to him that a certain process of soil inoculation was necessary before this forage plant could be successfully grown. To-day—thanks to the man with the microscope and knowledge of chemistry—he is indeed an ignorant husbandman who does not know that the presence of nitrogen-gathering bacteria is absolutely essential to the thrifty growth of alfalfa, and the average farmer is now intelligently informed concerning the proper methods which should be pursued in order to secure a good stand of this valuable plant, and is able to avoid those numerous pitfalls which, in the past, have cost him so much in time, labor and fruitless expenditure of money.

Similarly with wheat, oats, flax and other common products of the farm. Exhaustive and irrefutable scientific investigation has been made into the nature and culture of each of them, and the resulting ascertained facts have been distributed broadcast to aid the agriculturist in securing the best returns from his labors.

Again taking alfalfa as an illustration, it is noted that the New York Agricultural Experiment Station has recently completed a series of elaborate experiments dealing with the culture of the plant on what are called "acid" lands. It has been known for years that a treatment of lime applied to such lands was, in many instances, of material benefit, but no exact data was available, and the methods of testing the acidity of the land were suspected of being unreliable. Now, through well distributed experiments undertaken simultaneously and extending over a period of two years, these questions have been definitely answered and the New York farmer can approach the problem of alfalfa raising with exact knowledge, based upon hundreds of carefully observed tests, to guide him in the undertaking.

Kansas, Ohio and other states have also probed deeply into this same subject, and the results of their careful experiments are available to anyone for the price of a postage stamp.

In these days of rapid settlement of the few remaining acres of Uncle Sam's domain, and the consequent inevitable approach of an era of intensified farming, the question of proper crop rotation is probably the most important one now before the farmer for consideration and action, and to the practical chemistry of the agricultural laboratory as applied to the soil must be given credit for the certain knowledge which now exists concerning the proper sequence of crops on different tracts of varying chemical composition. It is now known that the best rotation for a given tract can be ascertained with unerring certainty by a chemical analysis of the soil, thus saving the farmer possibly years of more or less successful experiments.

So also with the grain itself. Carefully observed tests are being carried on at all times having for their object the protection of the farmer from useless or unremunerative labor and for the purpose of guiding him in selection of the seed best adapted for his particular locality.

Yes, science has won; and the most encouraging feature of it all is that the farmer himself now concedes this, and welcomes eagerly all information concerning the secrets of nature which the botanist and chemist are offering him.

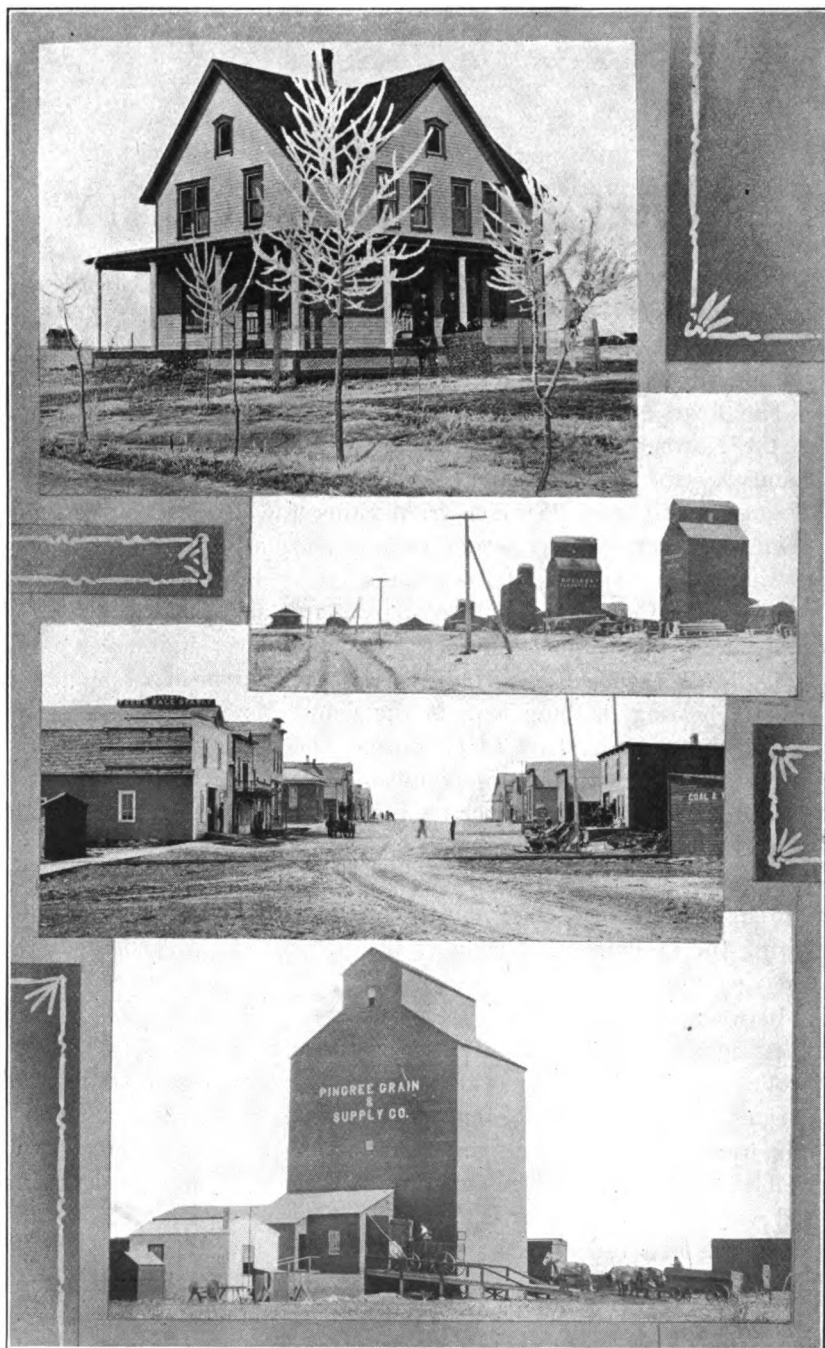
PINGREE, STUTSMAN COUNTY

Pingree is one of the most prosperous and progressive towns of Stutsman County, as is evidenced by her substantial business houses, fine residences and public buildings and improvements, and as a trading point has many advantages.

The town is conveniently located in the Devil's Lake division of the Northern Pacific Railway, midway between Jamestown, the county seat of Stutsman, and Carrington, the county seat of Foster County, being over 20 miles from either town. On the west of town the Pipestem river wends its way and on the east the waters of the James river travel toward the gulf. Jim Lake, the queen of Stutsman County lakes, is a pretty place, and an ideal place to visit during the summer months. The lake is over four miles long and affords excellent opportunities for the enjoyment of hunting, fishing, boating, bathing and, in the winter time, ice boating and skating bring their share of pleasure. The water of the lake and rivers abounds with the "finny inhabitants of the brook" and the United States fishery is stocking these water with black bass and other varieties that delight the disciples of Isaak Walton.

Lakeview park on the north end of the lake has been surveyed off into lots and considerable improvements are being made in preparing the grounds for a summer resort, where many people enjoy a day's outing.

Between the James and Pipestem rivers is located some of the finest agricultural and pasture land in the state, which is fast being broken up by the steam plows and horse power and seeded to various kinds of crops. Many seasons have given such abundant crop returns that progressive settlers from other states have been enabled to pay for hundreds of acres of their newly purchased virgin soil with returns from the first crop. This section of North Dakota offers the best opportunities to the hustling husbandman of small means of any state in the Union, a fact which many, who started here with empty hands a few years ago, but a strong determination to succeed, can abundantly support by testimony, and the business men of Pingree are ever ready to give a "wing of sup-



PINGREE, N. D.

1. Price Residence. 2. Elevators. 3. Alden Street. 4. 40,000 Bushel Farmers' Elevator.

port and comfort" to the industrious man, who is endeavoring to establish himself and build up a home.

The territory tributary to the town extends to the west for a distance of twenty-five miles and in this newly settled part of our territory a hustling, honest class of people, who have availed themselves of the opportunity of securing some good North Dakota soil at abnormally low rates, are developing its resources very rapidly. Grain growing, sheep raising and dairying are the leading pursuits of these people and their successes abundantly demonstrate the certainty of returns where the work is done in a faithful and intelligent manner.

The population of Pingree and vicinity has a strong representation of Irish, Germans, Scandinavian, Polish, English and American people, with the American and Scandinavian elements predominating, the comfortable modern homes testifying to their thrift and the productiveness of their lands, and the profitableness of their flocks and herds.

A kind Providence has shielded our people from the blighting effects of earthquakes, floods, cyclones and other terrible visitations that make life in some parts of the world so insecure, permitting our people to enjoy themselves as only North Dakotans can.

The pride of Pingree is its public school. The stately, commodious high school brick building, built during the summer of 1906 at a big outlay, is a model in every way and speaks volumes for the intelligence and enterprise of our citizens. Pingree public school facilities are second to none in the state, outside the larger towns.

The various religious denominations are well represented, there being at present three good church buildings in the town—the First Congregational Church of Pingree, located on Alden and English streets; the Scandinavian Lutheran Church, on West Alden and the Catholic church, on Wells and Bentley streets, with a neat parsonage in connection with the Congregational Church. Each church has a school for instruction and the Ladies' Aid Societies, working in conjunction, are doing some excellent work.

The Pingree State Bank, a branch of the James River National Bank, is quartered in its neat cement block building on the corner of Alden and Bentley streets and is the financial center of our rapidly developing community.

The North Dakota Independent Telephone Company has established a good town telephone system and exchange. The Pingree and Foothills telephone runs from Pingree west, while the Pingree-Arrowwood Company's line runs north and east from Pingree. A new company was formed recently and will build a line from Pingree south and west, giving the town excellent telephone connections.

The ever increasing number of acres of land that are being broken up each year and cultivated have necessitated the building of four elevators, the last built being a 40,000-bushel house, owned by the Pingree Grain & Supply Company, (Inc.), a farmers' organization. It is estimated there will be 400,000 bushels of grain marketed at this point during the present year, which will necessitate more grain handling facilities.

Pingree offers some exceptional openings for a number of different businesses with good returns assured to the hustler. The Secretary of the Commercial Club will be glad to answer all correspondence pertaining to the town and surrounding country from those who may be desirous of knowing more about this town and locality.

Pingree will be the eastern terminus of the new road surveyed last year by the Northern Pacific Railway Company from Pingree to the coal beds near Wilton, which will bring considerable business to this point and add materially in the development of this locality.

Our people have taken an active interest in the providing of good roads and bridges so that those living in tributary territory might have the freest access to this commercial center of north central Stutsman County. Having the James river on the east and the Pipestem on the west, four strong steel bridges have been provided, one northeast and one southeast of town over the James river and one southwest and one northwest over the Pipestem, which facilitate travel from every point of the compass. A new county road was laid out by our commissioners some time ago, extending from Pingree west to the Kidder County line, a distance of about thirty miles, and several thousand dollars were expended on this main road since. Branch roads will be built and connect with this trunk road, which will be greatly improved in 1910.

Our enterprising citizens have taken a lively interest in tree culture and beginning several years ago, a large number of the most



VIEWS IN FINGREE, N. D.

1. Catholic Church.
2. Congregational Church.
3. High School.
4. Norwegian Lutheran Church.

select trees have been planted and cultivated in all parts of the town and around "Sunset Park," laid out in the west part of the town on Alden street. These trees are making fine growth and add materially to the fine appearance of our growing town.

During the fall of 1905 the business men organized the Pingree Improvement Society for the purpose of having concerted action in securing many much needed improvements, and the results have been far reaching and most gratifying—securing much for the locality that could not have been gotten in any other way. In 1908 the Improvement society was superseded by the Pingree Commercial Club and the work has been pushed along with very satisfactory results. During the present year a number of market days have been held under the auspices of the club and the people have shown the keenest interest in the affair.



A SUM IN PROPORTION

IF land that is worth \$100 an acre can produce an average crop of 60 bushels of corn to the acre, or 15 to 20 bushels of winter wheat, or 30 bushels of winter rye, or 30 bushels of barley, or 35 bushels of oats, or 3 tons of clover at two cuttings, or 3 to 3½ tons of alfalfa at three cuttings, with the market which fixes the prices of its produce within a radius of 400 miles, then what should land be worth that can produce from 50 to 60 bushels of corn to the acre, or 20 to 30 bushels of hard spring wheat, or 25 to 35 bushels of macaroni or winter wheat, or 30 to 35 bushels of either spring or winter rye, or 40 to 45 bushels of barley, or 60 to 75 bushels of oats, or three tons of clover at two cuttings, or three to four tons of alfalfa in three cuttings, with the market which fixes the price of its products also within a radius of 400 miles. You must also take into consideration that it is necessary to enrich the \$100 an acre land with costly fertilizers, whereas upon the other tract the crops enumerated can be grown without any artificial aid whatsoever, and that the net price received for most of the produce sold from either tract is about the same, with the possible exception of forage crops, which from the first tract are readily saleable at comparatively stable and remunerative cash figures, while from the second tract they might have to be sold for a lower cash price or else fed to stock in order to secure their real value.

The average farmer, or intelligent dweller in the city, after considering the above figures and statements, would be compelled to admit that, tract for tract, the second piece of land had made the better showing as a crop producer and money earner and should therefore be deemed the most valuable. What then would be his conclusions when he was informed that land capable of producing all the crops enumerated above, and even land which has actually done so, can be bought in North Dakota for from \$15 to \$25 per acre.

The question which would immediately occur to him would undoubtedly be—is the \$15 to \$25 land too low or the \$100 land too high? The answer is simply one of commercial computation. If it can be shown—as it can be—that the \$100 tract returns a good

round percentage of gain on an average year's tillage, after deducting every expenditure properly chargeable against it, then its value would be clearly established at that figure, and the conclusion would be forced that the \$15 to \$25 land is out of all proportion too low, and, at the figure named, would be deemed one of the best agricultural bargains ever temptingly displayed before a home-hungry people.

Is it any wonder then that with such a prospect of peaceful plenty and modest affluence before a nerve-racked and over-driven urban population, the cry of "Back to the farm" is gaining in strength and volume, and that weary men and women, whose ancestors a generation ago, or possibly themselves a decade since, flocked to the busy commercial centers with roseate dreams of quickly and easily won wealth, should turn their longing eyes to the rich prairies of the west, when they have found out through physical suffering and mental travail that all is not gold that glitters and that the prizes in the world's busy marts are few and the blanks many.

There is possibly no public official in the United States of America today who is in a better position to realize to its fullest extent this sad phase of human error than is the editor of this magazine.

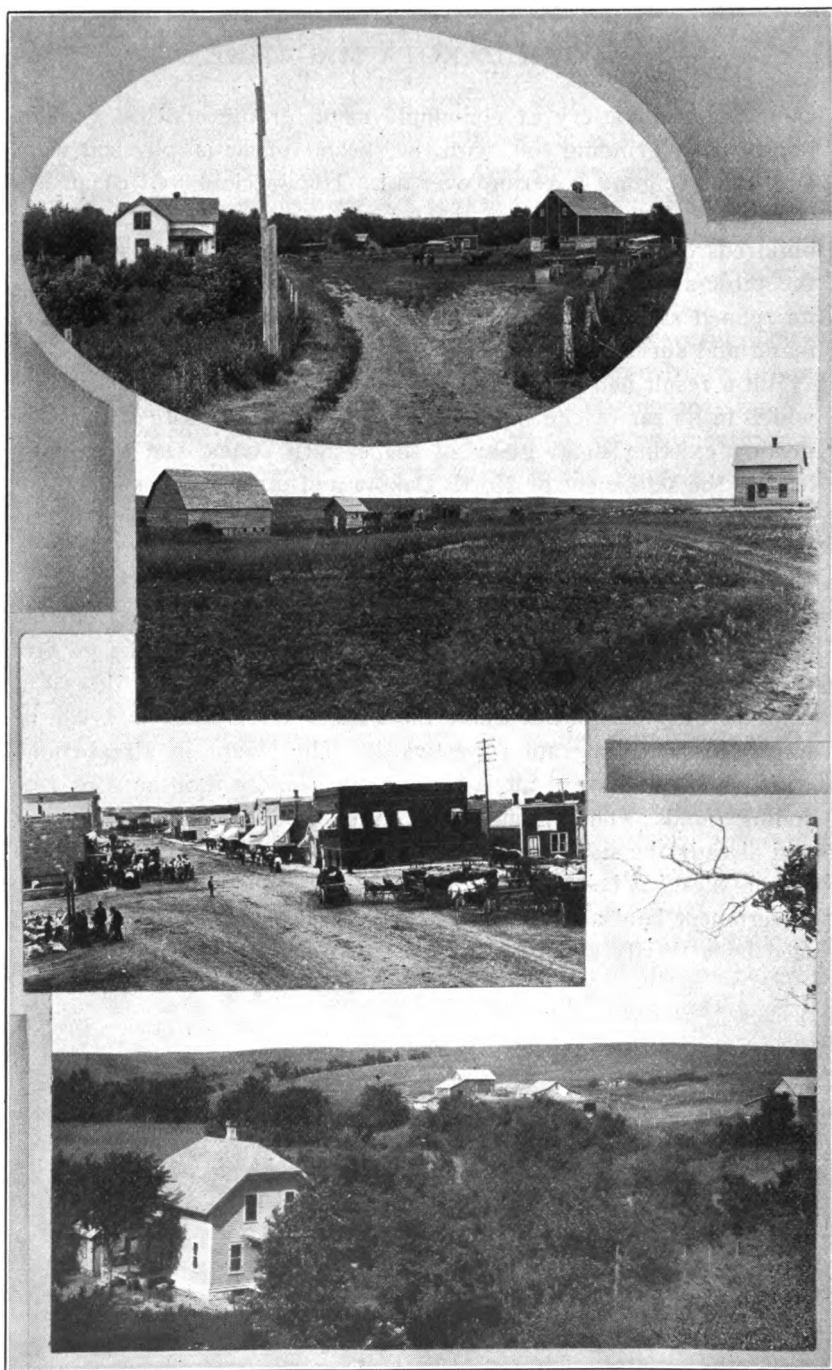
Among other plans for driving into that great immobile mass commonly called "the public" a knowledge of North Dakota's rich opportunities, he caused to be inserted in leading eastern papers a brief advertisement, headed "Make Your Wants Known," inviting those who read and who were desirous of making a change in their environment to send him a brief statement of their qualifications and aspirations and promising to place them, free of charge, before the people of his state, hoping in this manner to inaugurate a mutually beneficial correspondence between farmers and business men of North Dakota and those seeking employment or an avenue for safe investment.

Never before, from such an apparently innocent cause, did such a terrible arraignment of modern industrial conditions so suddenly assert itself. It seemed as though he had placed his finger on the canker spot of modern civilization and thereby struck the keynote of silently endured misery.

From old and young, from anxious middle age and aspiring youth, from college professors and from skilled mechanics, from highly trained specialists and from men who labor with their hands,

came the pathetic cry of non-employment, or the hopeless wail of poorly paid, grinding toil, with the specter of actual physical want and mental agony hovering over all. The specious veil of an apparent prosperity fell from the sordid East and disclosed, by the hundreds of answers received to the commissioner's advertisement, the pitiless workings of modern civilization which practices in all its refined savagery the inexorable laws governing supply and demand and survival of the fittest.

But a result had been obtained; a movement has been set on foot which in its far-reaching possibilities may mean a relief of the congestion existing in so many of the eastern states, and eventually lead to the settlement of North Dakota and other western commonwealths by a happy and contented population who will find in the free air and fertile soil of their new homes a remunerative return for labor expended and a surcease from the heartless grind of urban conditions. The hundreds of letters received by the commissioner in answer to his advertisements have been placed before fifty thousand people, all of whom either need such help as is described or know of opportunities where the writers' circumstances would be improved by a migration westward. The "Sum in Proportion" with which we have dealt is being placed before thousands of reasoning minds; enquiry and study of the statements is developing, and already the signs are not wanting which indicate that the "Call of the West" is being heeded, and that the millions of acres of free government land and adjacent low priced tracts will soon be occupied by a thrifty and prosperous population.



1. Residence of A. G. Anderson, Velva, N. D. 2. Farm Buildings on 1,000-Acre Farm of P. W. Miller, Velva, N. D. 3. Main Street in Velva, N. D. 4. Residence of James Wasson, Velva, N. D.

CAN YOU?

CAN you raise 25 bushels of No. 1 hard, Fife, Saskatchewan, or Blue Stem wheat to the acre?

Can you raise 25 to 30 bushels of durum, commonly called macaroni wheat, to the acre or 30 to 40 bushels of winter or spring rye, or 40 to 50 bushels of barley, or 60 to 90 bushels of oats, or 50 to 60 bushels of dent corn, or 15 to 20 bushels of flax, or 150 to 400 bushels of potatoes?

Can you secure a good stand of alfalfa in one year and the following season cut the plat three times, securing an average of one and a half tons to the acre at each cutting?

Can you plow up your grass land, disc and harrow it down immediately after plowing, seed it to flax and take off a crop which will pay for the land and leave you a handsome profit—all in one season?

Can you take grain from your granary and fill up an 800-bushel car, or deliver it to an elevator, in one day, with three two-horse wagons and teams?

Can you open your farm-house window in the early morning and see the children trooping on their way to school, and, a little later, hear their fresh young voices singing the morning hymn of praise and thanks to a bounteous Providence?

And can you do all these things on land that has never received a drop of water artificially delivered or been renewed with a single ounce of fertilizer, and continue to do them, year in and year out, without any apparent diminution of yield?

How's that? Corn. Oh yes, you can raise the corn, and doubtless you have the schools. Why not? The state has been settled half a century or more, and your population is a large one. But you are not so sure about the wheat and oats and the barley and the flax. Why, some of you hardly know what flax is; and yet it often sells at \$1.50 per bushel, and you sometimes wonder if it doesn't sell for more than that when you pay for that barrel of linseed oil which you buy when you paint your house or barn in the fall; and it's a cinch that you cannot pay for an acre of land with one crop of flax grown upon it, even if you could and did raise it.

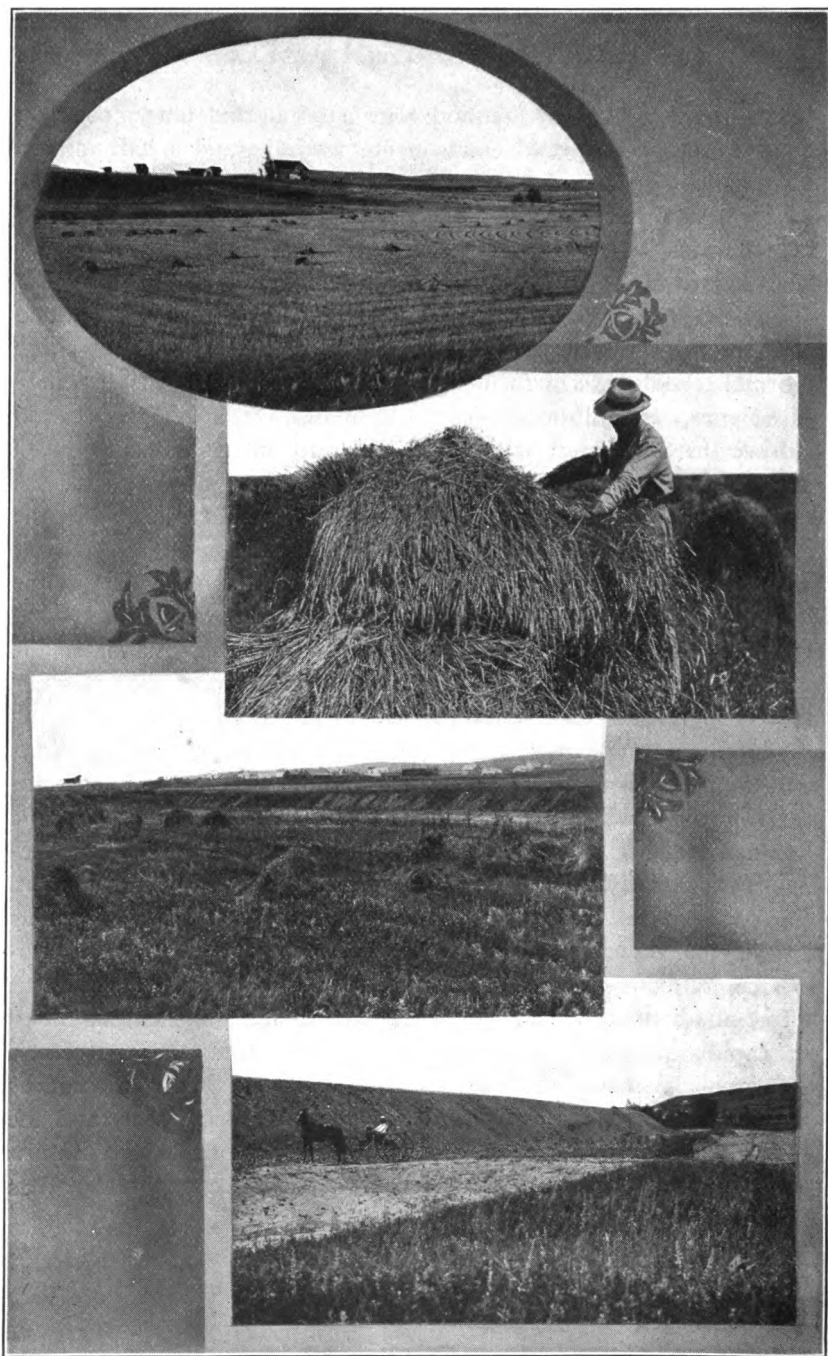
for your land is selling at from \$75 to \$125 per acre, and it would be a pretty rich harvest of any kind of crop which would produce that sum per acre in any one season. And yet there is land that can produce all the crops enumerated, and more too, which can be bought at from \$15 to \$20 per acre, out here in North Dakota, where the greatest agricultural state in the Union has been developed during the past decade and is now pouring its millions of surplus bushels into the granaries of the world.

And you can perhaps get your grain to market as rapidly and at as small a cost as the North Dakota farmer, for you are living in an old-settled state, and it is pretty well gridironed by railroads, and thousands of dollars have been expended upon its highways, which nevertheless become well-nigh impassable when it rains for a day or two without stopping, as it sometimes does. But, all the same, North Dakota does not take her hat off to any state her size and weight in the matter of marketing facilities. Her prairie soils make the very best of natural highways at a minimum of cost, and 5,000 miles of railway, with three transcontinental lines traversing the state from east to west, is not so bad for a state so young as she is, the more so when it is remembered that this is double the mileage existing in all Minnesota and the Dakotas less than thirty years ago. And these 5,000 miles do not include the road projected from Pembina in the extreme northeastern corner of the state to Forbes, south of Ellendale, on the southern boundary line, and which traverses the richest and most thickly populated part of the wheat growing districts; nor does it include the two branches now in actual course of construction, one from Mandan north to Stanton, west of the Missouri river and the other south from Mandan to Fort Yates and Mott in Hettinger county, and which penetrates a rich and thickly populated country, once the home of Sitting Bull and his painted warriors. In fact the state is being rapidly criss-crossed with feeding branches to the main lines, so that even now, without the additional construction going on, there are few farmers who are not within easy distance of some railway market point where their cattle, horses, grain and other products can either be sold or shipped direct to the big markets of Minneapolis, St. Paul, Duluth or Chicago.

And as to the schools. Well, North Dakota is proud of her schools, and also of the state institutions of learning for which the schools

are preparatory. Five thousand four hundred and ninety common schools, with a perpetual endowment of twelve and a half million dollars, which will eventually amount to over fifty millions when all the school lands are disposed of and the money invested; 143, 227 scholars, taught by 7,113 teachers—being a teacher for every 20 scholars—in 5,490 school houses, is a pretty fair showing for one of the youngest states in the Union, and of which the total population last census was only 437,000. Then there are the State Normal schools, two of them—the Industrial Normal School, School of Science, Agricultural College, and highest of all in erudition and culture the State University. For the unfortunates who have been deprived of their reason a state hospital has been provided, and the deaf, dumb and blind are also amply cared for and educated at the state's expense, in thoroughly up-to-date institutions.

So to all of you who cannot answer in the affirmative all of the questions which have been asked, North Dakota presents her compliments and begs respectfully to state that she can put you in the way of doing all these things and a good deal more. She has unplowed acres for the thousands, which only need the magic touch of intelligent industry to be transformed into prosperous farms and happy homes. She has business and manufacturing opportunities for those who prefer the stir of the city to the more bucolic life of a farmer. She has undeveloped wealth in the soil and beneath the soil, awaiting the man of action to develop and secure it. She wants live, progressive, industrious and law-abiding citizens and beyond these qualifications does not care whether the new comer's capital consists of anything more than a capacity for intelligent effort and a stout heart. Now is the time to act. The state is filling up rapidly with men and women eager to secure home and plenty. The public domain is lessening. The statistics of today as regards land open for public entry will not apply a week hence, and the one who would base his action on the statement made herein must act quickly or he will find, all too late, that the opportunity has passed forever.



MORTON COUNTY.

1. St. Anthony, N. D. 2. Custer Flats, South of Mandan, N. D. 3. Railroad Grade, Flasher, N. D. 4. Railroad Grade, Mandan, N. D.

AGRICULTURE IN NORTH DAKOTA

NO state in the Union has a brighter agricultural outlook than North Dakota.

This statement is made without reservation or fear of successful contradiction, and even a cursory consideration of the facts upon which it is based will amply corroborate the assertion.

One by one the erroneous conceptions of the fitness of our soil and climate for the culture and maturing of those cereals and grasses which are deemed essential to the full prosperity of the farmer have been disproved in the most conclusive manner by abundant yields of the very grains and grasses themselves whose successful raising was, at one time, asserted to be impossible. Thus corn, winter wheat and rye, timothy, clover and alfalfa, have of recent years been added permanently to the list of agricultural products which can be cultivated with certainty and profit; and with these additions to her already rich agricultural repertoire North Dakota can claim rank with the best as far as diversity is concerned.

As regards natural adaptability for economical farming operations North Dakota is without a peer. Nature seems to have had in mind the future needs of a great nation when she permitted the formation of the vast fertile, treeless plains of the prairie state. Here lie millions of acres needing but the magic touch of the plow and harrow to burst forth into luxuriant crops. The absence of trees, except along the banks of streams and in a few hilly sections, obviate all necessity for the tremendous labor and cost involved in preparing land for the seed in other states, and, as if to compensate for the loss of firewood, which at one time was held to be an insuperable drawback to complete settlement of the country, Nature has come to the rescue by providing thousands of square miles underlaid with coal deposits sufficient to supply fuel for all time to a dense population, the whole constituting conditions for economy in farming and comfort in living which have no known parallel elsewhere.

Profiting by the experience of her sister state Minnesota, North Dakota has realized in time the only danger which threatens her

agricultural prospects. This danger has arisen from the continuous cropping of land to one cereal and, in the case of Minnesota, has resulted in great loss, both in yield and quality, to the spring wheat industry. Signs have not been wanting in North Dakota that a similar catastrophe might be impending, but happily the warning note has been sounded, and farmers generally are now thoroughly aroused to the necessity of so rotating their crops as to insure a continuous replenishment of those soil constituents which are necessary to secure the most satisfactory grain yields.

So, as chief of the spring wheat states, with millions of acres yet untouched by the plow, and secure in the knowledge which agricultural science has given the world and which promises perennial fertility to the soil, North Dakota may well feel satisfied with the outlook of the coming years and face the future with supreme confidence.

A retrospective glance over the past history of grain raising in the state might be of interest at this time as showing what progress has been made in the past and as indicative of our reasonable expectations for the future. For this purpose a period of seven years, from 1902 to 1908, has been chosen.

WHEAT IN NORTH DAKOTA.

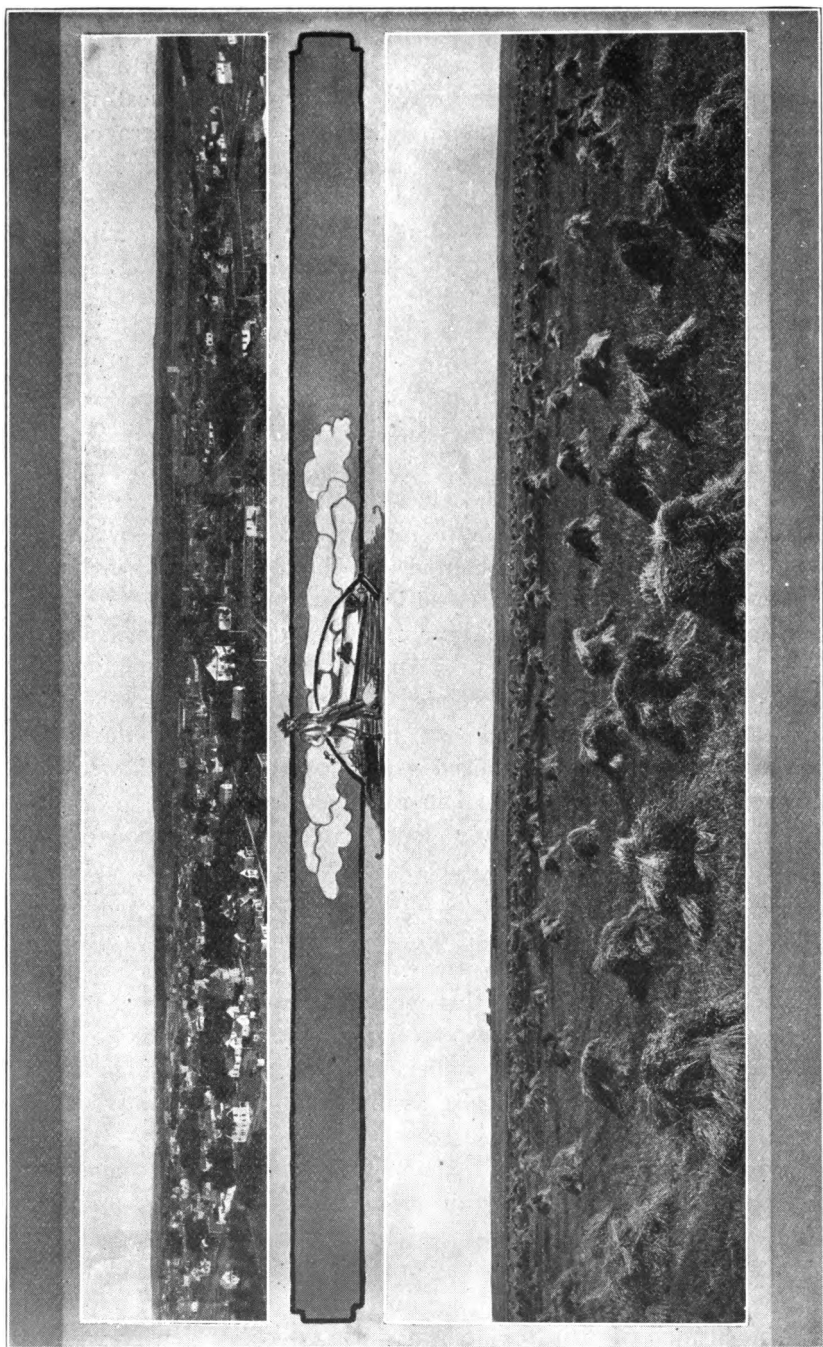
Since 1902 the wheat acreage of the state has more than doubled. The area planted this spring (1909) was 6,872,601 acres as compared with 2,946,723 acres in 1902. With the exception of one year—1906—the increase has been steadily progressive, and in that year the increase over 1905 was so large that a falling off was noticeable in 1907. This increase was doubtless due to the large crop raised in 1905, which induced many farmers to put in a larger acreage on poorly prepared land with inferior seed in 1906, in the hopes of securing the same handsome returns as the year before. The resulting crop, as an average, was disappointing, for less grain was raised from more acres than in 1905, and bore fruit in a reduced wheat acreage in 1907. The 1908 acreage, however, again showed an average increase, while the estimated acreage for 1909 shows the most remarkable advance in the history of the state, viz, 1,279,971 acres more than in 1908. Nor is this heavy gain to be attributed except in a small degree, to the fat prices realized for the cereal in 1908, but rather it is due to the breaking of fresh ground and the healthy development of the state as a whole.

The one unfavorable feature of wheat culture in North Dakota is the low average yield as compared with other wheat raising countries, notably Great Britain, where the annual average yield often exceeds thirty bushels to the acre. It should be remembered, however, in making this comparison, that the wheat grown in England is of the soft, heavy-yielding variety; which is much more prolific than the hard spring wheats under equal soil and climatic conditions; also that the English farmer spends as much per annum in fertilizer as would, but a few years ago, have bought the land in North Dakota, and further, that the necessity of the English farmer securing the utmost return from his farm is much more insistent in that land of high land values and rentals than in North Dakota, where the comparative ease of culture and unlimited area available have induced a less intensified method of farming. Nevertheless, making all reasonable allowance for these differences between the two countries, it must be admitted that the average yield in North Dakota could be greatly increased by a recognition of the fact that soil is not inexhaustible and cannot withstand continuous depletion with no compensating return. That our farmers have at last realized this important fact is becoming more and more apparent in the increasing acreage of the clovers, timothy and other fodder crops which are now well recognized as the natural rejuvenators of a hardworked soil, when grown in a proper rotation.

Other hopeful signs are the more extended recognition of the value of chemical baths for fungus growth in seed wheat and oats, greater care in the selection of fertile seed, and in the elimination of foul extraneous seed therefrom, and a keener interest in any new varieties which promise improvement in yield or quality. The preparation of the soil itself, so that moisture can be conserved for the benefit of growing crops, is also receiving closer study and our farmers are gradually coming to understand that a careful attention to all these details will practically assure them a remunerative crop, even in the most unfavorable season.

While North Dakota will undoubtedly always rely mainly on spring wheat as her staple grain product, it is now an assured fact that winter wheat can be successfully grown in the state, and we may expect an increasing acreage of this variety whose culture, in many sections, offers an alluring prospect to the farmer.

The history of macaroni wheat during the last few years has been one of increasing acreage and a larger average yield per acre



1. Bird's Eye View of Mandan, N. D. 2. Typical Harvest Field, North Dakota.

under all conditions than the ordinary varieties. This crop is already one of our principal products and promises to be a strong competitor of other kinds in the near future. Many millers are recognizing this fact by adapting their plants for the exclusive milling of this wheat, and the time does not seem to be far distant when the price per bushel on the market of the durum wheat will closely approximate that of the best fife and blue stem strains.

The threshing machine has not yet told its full story for 1909. but that it will be an interesting one no one can doubt who considers the figures already available. Prospects seem bright for a record yield despite the local losses sustained through hail, excessive moisture and heat. The increased acreage alone—assuming that the average yield will be no more than in 1908—indicates a yield of 85,000,000 bushels of spring wheat, and there is good reason for believing that this may be largely exceeded. For each bushel which the average yield per acre of 1909 exceeds that of 1908 over 6,000,000 bushels will be added to the above figures, and that this may be the case to the extent of two or even three bushels to the acre is the confident prediction of expert crop statisticians both on account of the generally favorable state-wide conditions existing during the growing season, and because of the large new acreage which will be growing its first wheat crop. Thus, when viewed from the standpoint of these figures, the estimate of 95,000,000 to 100,000,000 bushels, which has been made, does not seem by any means excessive. The bushel measure however, alone can tell the true story, although we may feel reasonably assured that a record for the state will be established, and the supremacy of North Dakota in the production of spring wheat fully maintained.

OATS IN NORTH DAKOTA.

The acreage planted to oats in North Dakota has steadily increased from 802, 732 acres in 1902 to 1,867,069 acres in the spring of 1909. This increase has been steadily cumulative year by year and would seem to have kept place with growth of farming operations, which would naturally entail the use of an ever increasing number of live stock for the tillage and harvesting of the crops, for little, if any, of the crop leaves the state for cash realization.

As with wheat the average yield per acre could be greatly increased by proper rotation, better preparation of seed bed, more discriminating selection of the seed itself and chemical treatment

of the same for fungus growths. With reasonable attention to these important details there is no reason why the average yield per acre could not be doubled.

The quality of oats which can be raised in North Dakota is very high, and it is not uncommon to find samples which exceed 40 pounds in weight to the measured bushel, where conditions have been reasonably favorable to the growth of the crop. When it is noted that the weight of a bushel of oats is statutorily fixed at 32 pounds this alone should be a fair criterion of what can be accomplished by intelligent farming.

It is doubtful if the farmers of the state have yet fully realized the great feeding value of oats for all kinds of live stock or they would most certainly use the grain more extensively for this purpose than is now the case. The improved flavor of mutton or pork fattened, or at any rate finished, on oats will amply repay experiment along this line. The celebrated Yorkshire bacon and ham, which have made that English county famous the world over for its choice pork products, owe their excellent flavor to the six weeks finishing process on cracked oats which is there deemed essential if the best results are desired.

It is probably because oats is the only grain which can be fed safely and with reasonable economy to working stock as their exclusive daily ration that its great usefulness for other animals has been, to a certain extent, overlooked. Scientific demonstration has now, however, given it a very high place in the feeding value scale for milch cattle, sheep, hogs and calves, and the progressive farmer will note these well established facts and govern his stock feeding accordingly.

BARLEY IN NORTH DAKOTA.

The area devoted to barley in North Dakota comes third on the list of grains in the state, there being 1,157,260 acres sown in the spring of 1909, or nearly three times the acreage of 417,969 acres sowed in 1902.

The quality of grain produced is very high, on account of the generally favorable climatic conditions existing during the harvesting period, which, almost invariably, insure a bright, full weight berry, qualities much desired for malting purposes, and which cause the North Dakota product to be eagerly sought by brewers.

Thus barley is one of the crops which will bring a direct cash return, and often a handsome profit to the farmer in this manner.

The grain has also a high food value, especially for milch cattle and swine, and can always be made a remunerative crop when marketed in this way, so, when the accident of a wet or otherwise unfavorable harvest renders it less profitable than it would otherwise have been as a cash item, its value as a stock food will save the farmer from any ultimate loss.

Until recently barley has been extensively planted as a weed exterminator, on account of the late date at which it can be sown in the spring and its rapid growth and consequent early harvest. These factors permit a late plowing in the spring, after the weeds have started, and an early plowing in the fall, which is very effective in cleaning foul land. As this method has however only proven effective at the expense of the crop itself, and as the value of a well balanced rotation of crops is gaining greater recognition, it is being gradually abandoned and barley is taking its place in the sequence of crops which insures to each its full opportunity for effective growth, and, at the same time, maintains the continuous productivity of the soil.

FLAX IN NORTH DAKOTA.

Flax culture in North Dakota during the past seven years has been a very uncertain quantity and the acreage has shrunk from 1,897,414 acres in 1902 to 935,128 acres in the spring of 1909.

This shrinkage has been owing to causes which are entirely removeable and which in no way reflect upon the suitability of North Dakota soil for the successful and profitable production of this crop.

The disease known as "flax wilt" is responsible for a large percentage of this shrinkage and at one time seemed to threaten the practical destruction of the crop. Scientific investigation, however, into the causes and means of prevention of this blight, has removed any further fear on this account, and it may now be confidently and truthfully asserted that, by the use of clean seed—of which a practically immune strain has been developed—no further damage from wilt need be suffered.

Another potent cause for failure to secure an adequate yield has been that flax has too often been made the scapegoat crop—as it

were—with which a belated field has been seeded, in the hope that, by some lucky dispensation of Providence, it might be permitted to mature in spite of weedy growth or fall frosts. Thus thousands of acres can be seen any fall which are either too weedy to be worth harvesting or too green to have any chance of maturing.

Where, however, good seed has been sown, in due season, on properly prepared ground, the resulting crop has been, in almost every instance, a handsomely remunerative one. Under such conditions numerous yields of 20 bushels to the acre and over have been reported every season and in many instances the first crop of flax on new ground has more than paid the full purchase price or worth of the land on which it was planted.

So far no serious attempt has been made to use flax straw for any of the purposes to which it is put in other countries, and it is at the present time a moot question whether the fibre, as grown in this state, is of much commercial value. Some experiments would indicate however, that it can be used for the manufacture of a serviceable binding twine, in which case a steady market may soon be found for it.

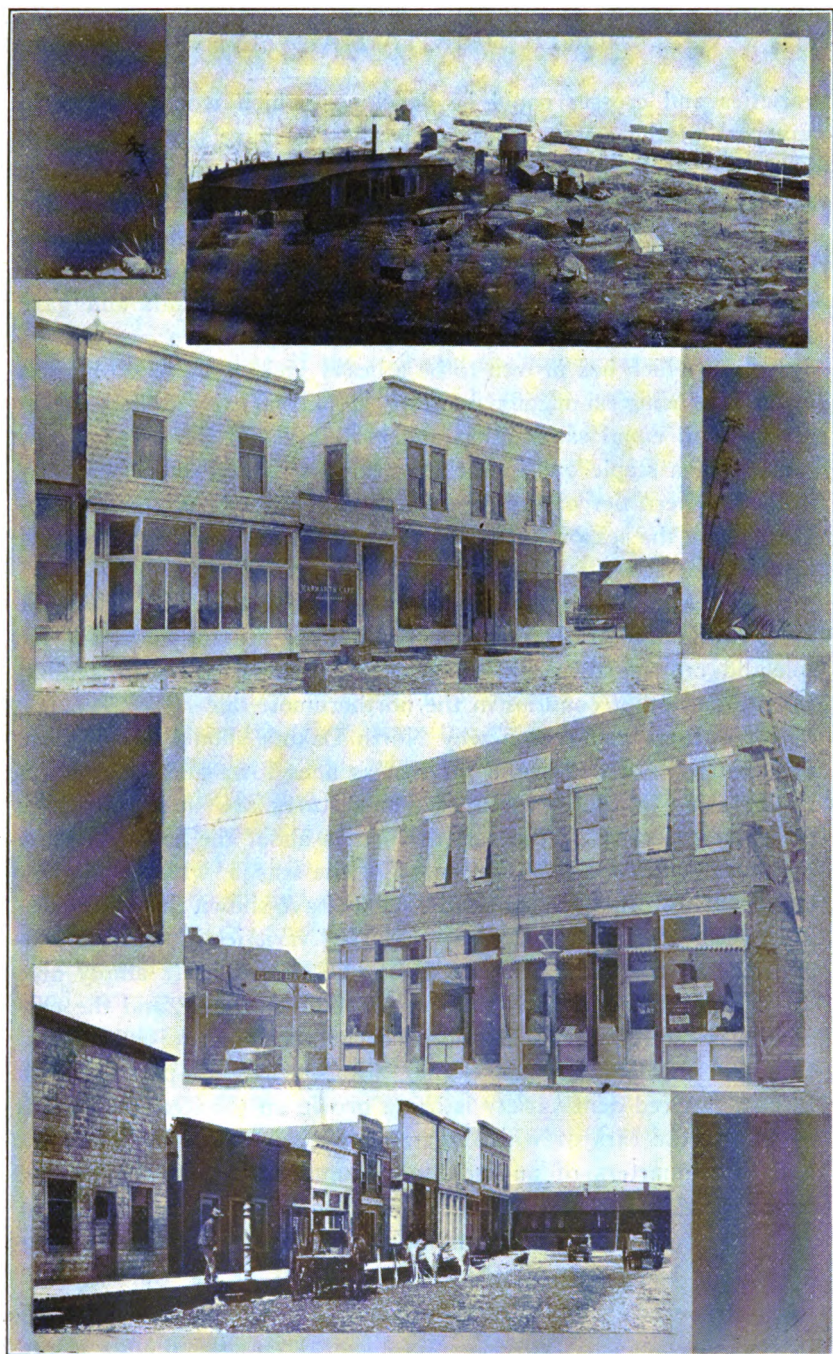
Probably the most remarkable and regrettable fact in connection with flax-raising in North Dakota is that, of all the millions of bushels raised annually in the state, not one is manufactured at home into its principal constituent parts of oil and oil cake, so much of both of which are used by home consumers, and it would surely seem reasonable to conclude that the establishment of such an industry at some central point should be at once and highly remunerative.

THE CORN CROP.

North Dakota has at last reached that point in her agricultural development when she can claim and maintain her position in the corn belt of the United States.

This happy result has not been secured without much travail and disappointment, but has none the less been finally accomplished.

For years it was not considered practicable to mature any but the common Indian or Squaw corn variety, and that only in favored locations along the big river bottoms. Observing old-timers, however, had noticed that corn of these varieties could be raised with absolute certainty at these points when proper care was given to it during the growing season, and concluded therefrom that hardy



MARMARTH, N. D.

1. Railroad Shops. 2, 3 and 4. Business Houses.

varieties and crosses could be developed which would mature in any part of the state. These early theories have been more than surpassed in the practical conditions which prevail at this time, although the process of evolution has taken some quarter of a century to accomplish. Gradually, however, the persistent experimenters succeeded, by selection and blending, in securing a hardy white flint variety which grew thriftily on the uplands and gave a fair yield per acre. Further experimentation then produced a dent corn which has proven to be a heavy yielder, 50 to 60 bushels to the acre being no uncommon crop. Other varieties are now being grown with equal satisfaction and certainty and the crop is now considered a staple one in the greater part of the state, especially in the southern tier of counties where the country has a similar appearance in the season, to the best corn growing areas of Iowa and Illinois.

Many farmers in the southern part of the state have for years been successfully raising corn, and the year of 1909 will see splendid crops grown and ripened in Pembina, Walsh, Cavalier, Rolette and other counties in the northernmost tier.

Nor is there any reason why North Dakota should not produce as bountifully of this useful product as does Iowa and other states in the same latitude. Summer temperatures are sufficiently high to insure maturity of the ear, the soil is about the same, and the only real difference is in the length of the season, which is slightly longer in Iowa than in this state. As we have shown this has necessitated the development of early maturing varieties in order to procure the best results, and the plant has shown itself amply able to respond to all demands made upon it of this kind, and the prediction is offered that a decade hence will see corn raised successfully and profitably in much higher latitudes than any part of North Dakota. A red dent variety is being grown on the Rea farm south of Fargo, the ears of which average ten inches in length and six and three-quarters of an inch in circumference. In the present season a field of this corn was out of danger from frost on August 28th, and such results and conditions are only fairly representative of what is being accomplished in other parts of the state.

POTATO CROP.

North Dakota will accept second place to no state in the Union, or country in the world, as regards the natural fitness of her soil for potato culture and the quality of the resulting product. This is being already recognized by discriminating judges as is shown by the eagerness with which her output is being sought by outside buyers. Unfortunately the pressure of other agricultural pursuits, the perishable nature of the root and the somewhat uncertain marketing opportunities for surplusage, have not permitted the attention being given by our farmers to this branch of agriculture which the special adaptability of soil for its culture warrants, and but a limited number of bushels at uncertain annual periods are available for export, but it is certain that in the near future the potato crop will be a source of steady revenue and much profit to those who will engage in it.

A noticeable fact in connection with the potato in North Dakota is its remarkable freedom from rot and scab which almost preclude its successful culture in other less favored regions. Generally, all over the state, the tuber leaves the ground smooth, of even size, of perfect soundness, and, wherever the seed has been properly selected and the ground cultivated, with a high yield per acre.

With the exception of a very small part of the eastern portion of the state—where the land is liable to submergence from spring and summer floods and where drainage systems have not yet been established—there is no part of North Dakota where potatoes cannot be successfully raised, but it is probable that the Missouri Slope and more western counties will constitute the state's potato patch in the future, on account of the more or less sandy texture of the soil. Wherever the farmers of this region have given the crop the attention it deserves a rich reward has invariably been the result, notwithstanding the present market uncertainties and the perishable nature of the crop.

CLOVER CROP.

Although the cultivation of clover in North Dakota is yet in its infancy results so far attained have been so remarkable as to justify most sanguine expectations for the future.

As with corn it was at one time believed that clover could not be successfully grown in this state and early attempts to grow it

were generally failures. This was doubtless due to the absence of the nitrogen-gathering bacteria which latter-day science has shown to be so indispensable to the full fecundity of the plant. Nature has now however made ample amends in this respect, and the crop can be grown in any part of the state where intelligent attention is paid to seed selection and soil preparation.

In the Red River Valley great success is being met with, and this valuable crop has now taken its proper place in the rotation series which is being so rapidly recognized as being the proper basis for successful agriculture. Such is the vitality of the plant in this section that four or five successive crops have been taken from one patch, the last crop yielding more than the first, although two years is considered to be the average life of one seeding.

ALFALFA.

It may now be truly said that alfalfa has come to stay in North Dakota. From all over the state come reports of its successful growth and the wonderful yields which have already been secured, in many instances equaling those gathered from the high-priced irrigated lands of Washington, Montana and Idaho.

This remarkable revival in the growing of a crop which, at one time seemed incapable of successful culture in this state, is directly traceable to the greater knowledge now existing on the subject, and farmers, who years ago gave up trying to secure a good stand, are now harvesting most satisfactory crops as a consequence of correct methods of soil preparation for the crop and its inoculation with the bacteria without which alfalfa cannot be successfully grown.

In almost every county of the state the acreage of this valuable forage crop is rapidly increasing and as farmers come to realize its great feeding value so will its field of usefulness and profit be still further enlarged.

TAME HAY.

Following the rapid settlement of the state, and consequent shrinkage of the wild grass area from which winter feed can be cut and cured, has come the necessity for providing some substitute, and wherever the problem has become insistent a satisfactory solution has always been found by the successful cultivation of tame

fodder grass, either annual or perennial. Thus millet and Hungary, brome grass, timothy, red-top, with other tame grasses and the clovers and alfalfa mentioned above are being raised with certainty and satisfaction wherever tried.

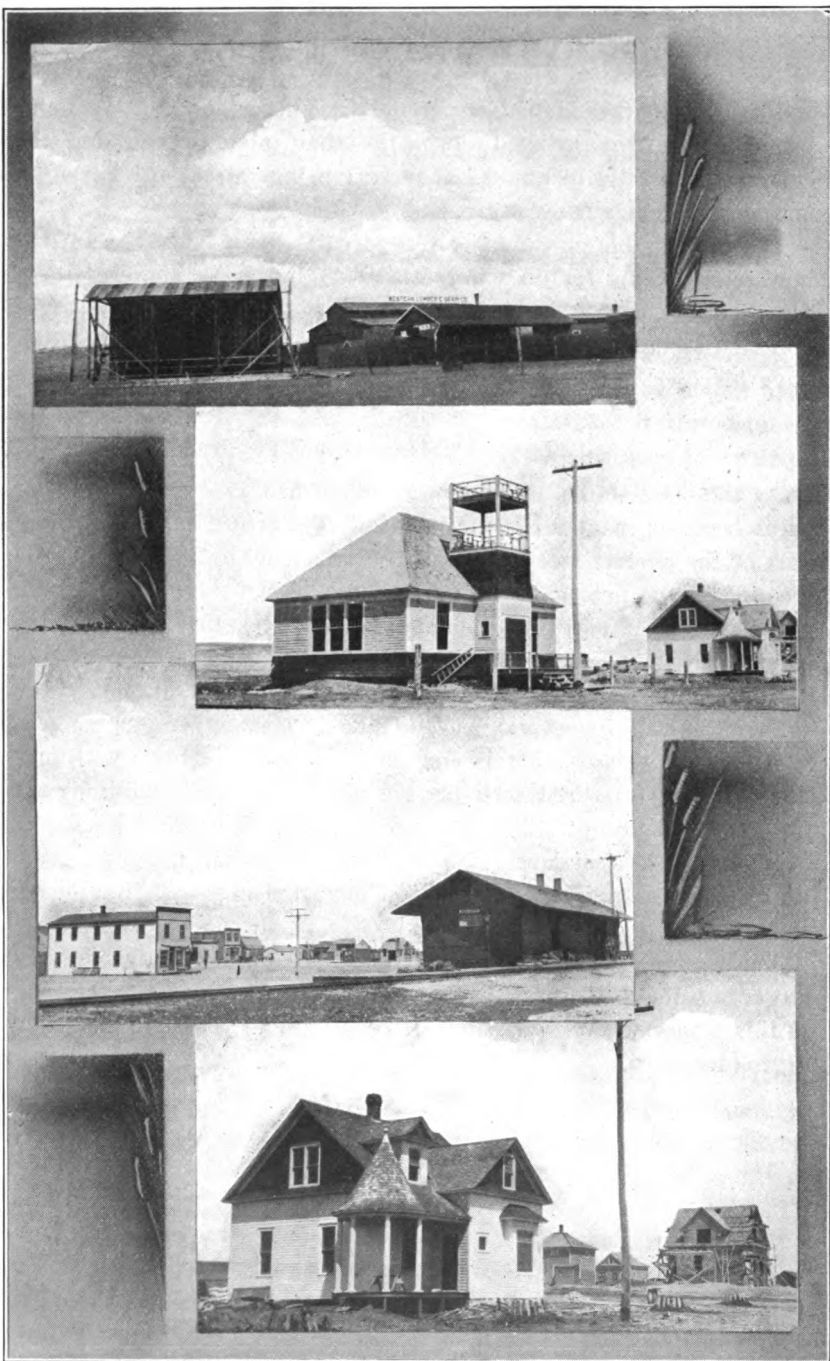
In many of the more thickly settled parts of the state the farmer now relies mainly for his winter roughage on one or more of these tame grasses, and it is but a question of time when prairie grass will be a secondary consideration and each farmer will, of necessity, have his own tame hay meadow and pasture.

ROOTS.

As the state settles up and more intensified farming, on smaller areas becomes mandatory, the value of root crops, as a component part of the perfect stock food ration, will come to be better understood. At the present time they are not used to any great extent and the spur of necessity will have to be felt before their use becomes general.

Sufficient quantities of the principal roots have, however, been grown to establish beyond question the fact that turnips, mangels, sugar beets, parsnips, carrots and rutabagas can be grown with prolific yields and assured certainty. Climatic and soil conditions are ideal for these crops. Turnips and rutabagas have been known to grow and yield abundantly where no other covering has been given the seed sown on freshly turned sod than that imparted by a heavy shower.

The weight per acre which can be raised of these crops is very large, in some instances reaching as much as twenty tons, exceeding in this respect every other kind of crop with the possible exception of fodder corn.



REEDER, N. D.

1. Lumber Yard. 2. Town Hall. 3. Depot and Business Houses.
4. Residences.

FRUIT GROWING IN NORTH DAKOTA

THE idea that fruit cannot be grown in North Dakota is erroneous and must be classed with the similar myths concerning corn, clover, alfalfa, timothy, etc., which have taken so many years to disprove, and which have, in the past, worked to the disadvantage of the state, wherever told.

Nature herself has furnished abundant proof to the contrary and the profusion with which wild currants, strawberries, gooseberries, plums and cherries are found shows clearly the lines to be followed in order to raise successfully tame and larger varieties of the same fruits.

Already this has been accomplished, and in many of our larger towns home grown tame fruits are raised in sufficient quantities to supply the local demand during the small fruit season. In July, 1909, one fruit raiser near Grafton picked over 5,000 quarts of high quality strawberries from one and three-quarter acres.

Grapes also grow wild all over the state, and there is no reason why other tame varieties should not be successfully cultivated. Apples, other than the crab varieties are also being grown and in size these equal, and in flavor far excel, the insipid products of the irrigated orchards of the west.

As the state becomes more settled and the farmers have more leisure to take up the smaller items of their varied calling, there is no reason to doubt that much progress will be made in fruit culture in North Dakota.

VEGETABLES.

North Dakota garden products are famous for their size, flavor and yield, and every known variety which matures in northern latitudes can be raised successfully. Among these, in addition to those alluded to under "Roots," may be mentioned cabbage, cauliflower, summer and winter squash, pumpkin, water and musk melons, asparagus, brocoli, kohl rabi, brussels sprouts, artichokes, etc., etc. Of many of these more than one crop can be secured in one

season, which is in itself an assurance of the quality, for rapidity of growth and tenderness of texture invariably go together.

Contrary to the general idea that a heavy muck soil is essential for the best results in celery culture, it has been found that this plant grows to the highest perfection in size, crispness and flavor, almost anywhere in North Dakota, provided an abundance of moisture is furnished. No better celery can be found anywhere than is grown in the vicinity of Jamestown and Bismarck and many other places which could be named. It is grown near Bismarck to a great size on the sandy loams of that neighborhood.

Tomatoes of the larger as well as the quicker ripening small varieties can also be grown throughout the state, provided a reasonable expedition is shown in setting out the young plants in the spring and proper care given during the growing period.

The following comparative table of yields for the past seven years of the four principal cereals may prove of interest to our readers:

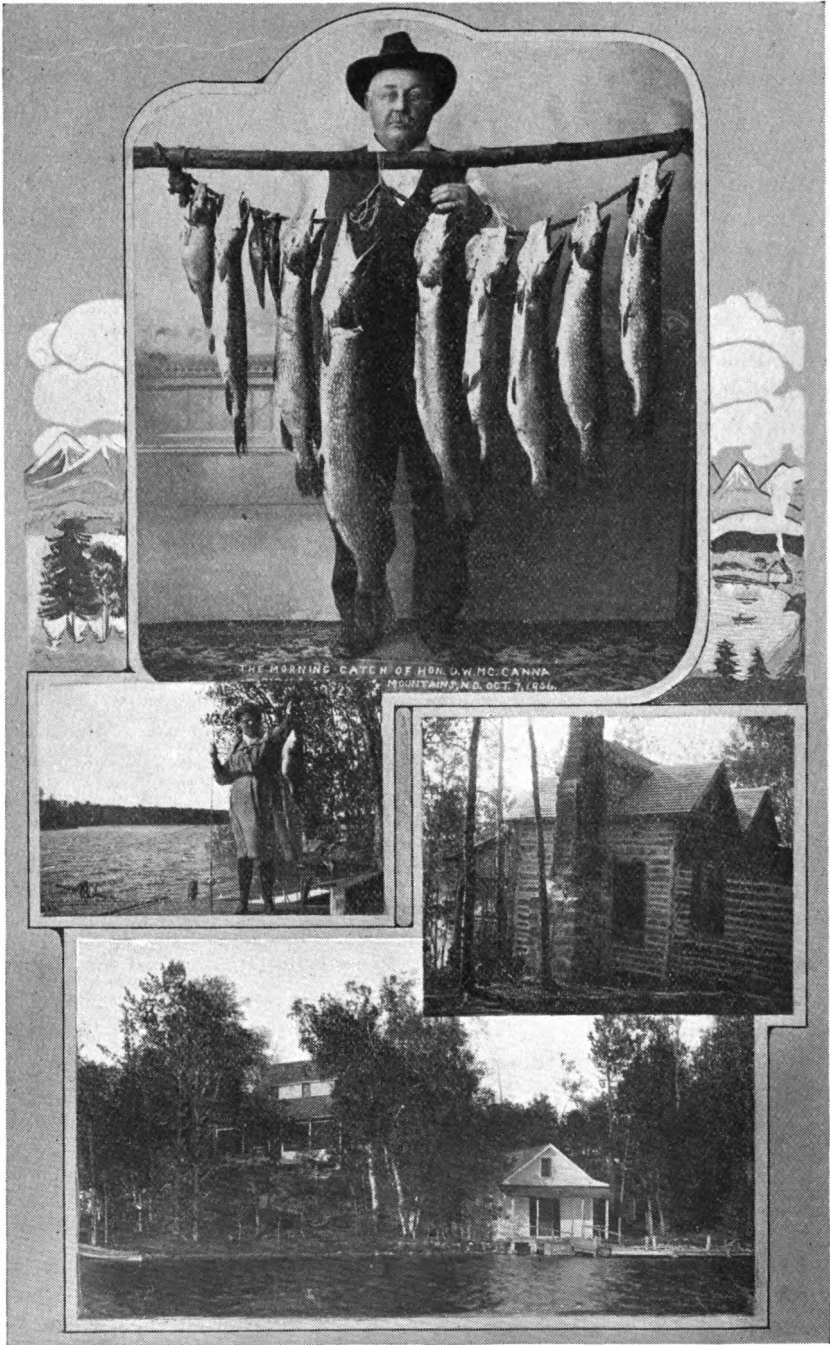
	1902	1903	1904	1905
Wheat acreage	2,946,723	3,570,571	4,668,435	5,026,950
Wheat yield	43,995,077	48,539,250	57,294,680	73,060,346
Oats acreage	802,732	962,130	1,098,638	1,108,556
Oats yield	27,849,741	23,495,810	37,938,241	38,724,458
Barley acreage	417,969	660,277	727,412	583,665
Barley yield	10,218,120	12,020,089	17,708,756	15,475,295
Flax acreage	1,897,414	1,633,748	850,005	1,177,492
Flax yield	17,007,195	11,638,081	9,297,169	14,441,040
	1906	1907	1908	1909
Wheat acreage	5,828,308	5,246,782	5,592,630	6,872,601
Wheat yield	72,534,821	54,830,416	69,426,304	
Oats acreage	1,202,862	1,312,372	1,607,761	1,867,069
Oats yield	33,940,122	29,283,520	34,624,137	
Barley acreage	612,671	768,322	1,081,094	1,157,260
Barley yield	13,289,547	13,534,458	18,121,327	
Flax acreage	1,374,702	1,392,333	945,728	935,128
Flax yield	13,075,301	10,977,111	8,376,854	

HUNTING AND FISHING IN NORTH DAKOTA

MUCH has been written and said concerning the splendid opportunities offered in North Dakota for a poor man to become a prosperous and substantial farmer, and many thousands of happy and contented citizens can testify that the claims made for the land of No. 1 Hard have not been over stated. On the other hand but little is heard of the capabilities of the state in furnishing for its people healthy recreation and sport, and the intending settler is apt to gain the impression that the state is fitted only for the accumulation of wealth, which to be enjoyed must be spent elsewhere.

Never was a more mistaken idea. North Dakota cannot only confer riches on her industrious citizens but can also amuse and solace them when, in their leisure moments, they seek change from the everyday grind of daily routine. It is true that the buffalo, which roamed the broad prairies in countless thousands but a few decades since, have disappeared, but the deer and antelope are still with us, moose and caribou are yet found in the northern counties of the state, grouse, prairie chickens, woodcock, pheasants, quail, and other game birds abound all over the state, while our lakes and streams are covered with wild geese, brant and ducks of all varieties in the spring and fall. So to the jaded city dweller seeking relaxation and to the farmer who takes a short breathing spell, when his crops are safely garnered in the autumn, comes the call of the shaded nooks and dells of our forests, of the babbling mountain stream or the placid, tree-bordered lake, which he can heed as his fancy wills, and in the excitement of the chase or more sedate pleasures of the rod and line forget for the time being the monotony of his customary occupations.

In the Pembina mountains, in northeast Cavalier county, black-tail deer are found in abundance, as well as pheasants and partridge. All along the wooded banks of the Missouri river, from Emmons county on the southern boundary line to Buford on the west, white-tailed deer and smaller game are plentiful, while in the Turtle mountain region hundreds of lakes, teeming with black bass, muska-



1. The Morning Catch. 2. Girl and her Catch. 3. A Cabin on the Lake. 4. Breezy Point, Fish Lake.

longe, trout and other game fish offer unexcelled opportunities to the lover of the gentle art.

Yet, with all these ideal offerings for the best of sport right here in our state, it is remarkable how many of our people go elsewhere for their annual hunting or fishing trip. With many this is doubtless because they are really unaware of the sport to be had in our fields, streams and lakes, but with others it can only be ascribed to blind indifference for home beauties, when compared with the imagined charms of some place more loudly advertised and difficult of access.

However, there are some who have discovered the sylvan beauties of our lakes and woodlands with which Nature has studded North Dakota, and who find in these charming spots an ample response to that "Call of the Wild" which seems to be hidden away in even the most austere and phlegmatic of us.

Game Warden W. N. Smith, in his first biennial report, has this to say in reference to the Turtle Mountain region:

"I am quite familiar with the lakes of Minnesota, but nowhere have I seen so many black bass as I saw in the waters of Fish Lake, out of St. Johns. Few people of the state know what a beautiful spot this is, and indeed there are a great many beautiful lakes all through the Turtle mountains. It is also quite surprising how many people have summer houses on these lakes, and how many more come from their homes in the prairie towns and on the prairie farms and enjoy an outing here among the mountains."

Who has not read of the lakes of northern Minnesota, teeming with game fish, and surrounded by forests in which all kinds of game abound, and gloated longingly over the beautiful pictures of their varied woodland scenery which, from time to time, appear in the public papers and magazines? Yet here, at our very doors almost, are beauty spots, gems of Nature's own setting, equally or more attractive, be the view-point that of a sportsman, naturalist, or a lover of primeval grandeur.

In the Turtle mountain region alone it has been estimated that there are some 800 square miles, covered with timber and dotted with hundreds of lakes, many of which are swarming with fish of all kinds, while others only need the introduction of small fry to become in a short time equally populous.

Fish Lake, near St. John, is probably the best known of these and, according to the interesting report of Captain Main, there were, in 1908, thirty-two cottages, two stores, two hotels and nine boat houses on its shores, and the estimated sum of \$75,000 was invested in these improvements.

Dion Lake, a smaller body of water, also near St. John, is being noted for the number of fish it contains. Says Captain Main:

"I have fished in many lakes and in lakes famed for their abundance of fish, and in states that annually appropriate thousands of dollars to maintain their lakes and streams, but in no other stream or lake have I ever seen fish so numerous."

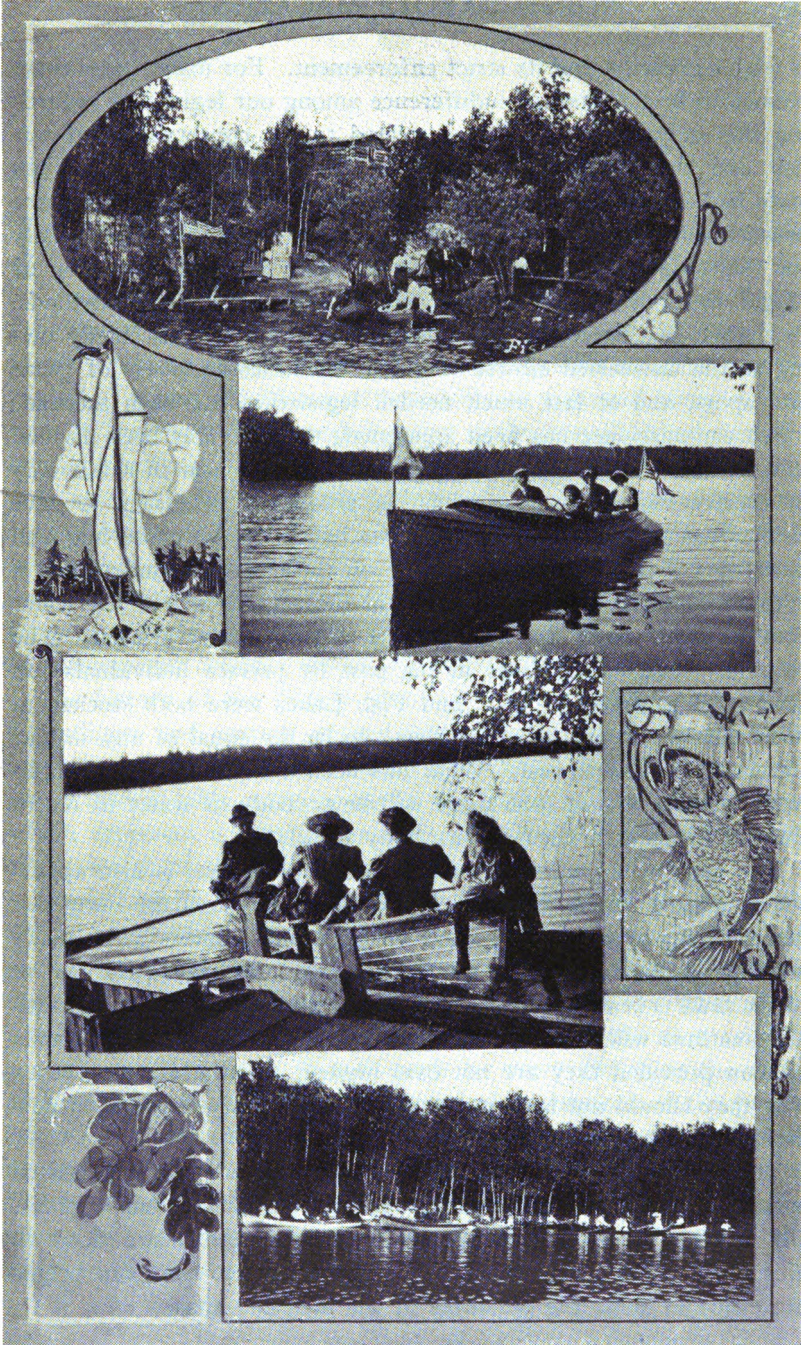
Again, writing of Fish Lake, the Captain gives us some idea of the prodigality of Nature in this beautiful region, as follows:

"Fish Lake, the largest and last named lake, is the only lake in the group participating in the public distribution of fish, that has been protected and by that reason developed along this line. This lake is located six miles west of St. John, in the high and timbered portion of the Turtle mountains. The lake has a high and irregular shore line of about twelve miles which is heavily timbered. The beach is sandy, and in many places it is quite an extent of beach, before the abrupt shore line is reached. In describing this lake I am only describing one of a hundred such lakes in the immediate vicinity."

While to this locality must be given the palm for beauty, it must not be supposed that this is the only part of the state where good sport can be had. Wherever any considerable body of water exists there are sure to be found in the spring and fall numberless wild geese, swans, brant and ducks. Thus Ramsey, Kidder, Burleigh, Stutsman, Benson, Morton and Emmons counties offer the best of sport to the hunter of this kind of game by reason of the numerous creeks, lakes and ponds which are scattered over them, while the stubble fields of the fall furnish a bait to the wild fowl which attracts them far afield from their native element.

The same stubble and corn fields which attract the wild geese are also favorite feeding grounds for grouse, prairie chickens and pheasants, and as a consequence these birds are found in large numbers all over the state.

It will thus be seen that North Dakota possesses all the essentials of a hunter's paradise and all that is required to maintain it as such



Fish Lake Views.

is wise legislation and its strict enforcement. For many years there seemed to be a feeling of indifference among our legislators regarding this question, especially as related to the conservation of our fish and their artificial propagation. For several years the state had practically no official at the head of this branch of game preservation and as a consequence such lakes as became noted locally for their big catches soon became seriously depleted by reason of illegal methods of snaring by net and other forbidden methods. A change has, however, been gradually brought about, chiefly owing to the unwearied efforts of a few disinterested lovers of game and sport, and at last much needed legislation has been secured; a fish commissioner has been appointed; the state has been divided into suitable districts and our game and fish are now in a fair way to receive that protection which is absolutely necessary to save them from practical extinction at the hands of the game hog and mercenary hunter. From this time on there will be undertaken a systemized planting of fish spawn in these lakes where the water conditions are right and where there are no fish at present. The result of such experiments in the past by private individuals has been most gratifying. Dion and Fish Lakes were both stocked in this manner and are now considered to be the equal of any similar waters in the Northwest. What has been done here can be duplicated elsewhere, and soon there will be no body of water in North Dakota which will not have its finny population.

The improved sentiment towards game protection is also apparent in regard to the deer which are still quite plentiful along our more heavily wooded rivers and streams, and hunters are already noticing an increase in their numbers since a more rigid enforcement of the laws is being insisted upon. Unlike the antelope these beautiful creatures will live and multiply in close proximity to the haunts of man provided they are not over-hunted, and there is no reason why they should not be kept among us indefinitely if the laws now in force are properly obeyed.

Thus, with the protection of our game and fish in the hands of enthusiastic officials, and a better realization by the public generally of the need of such protection, the sportsman's outlook in North Dakota is a rosy one, and for many years to come our people can enjoy at home the pleasures of the field and chase.

A SOUND INVESTMENT

IF individuals are largely judged by their fellowmen from the manner in which they spend their money and the results obtained, then in a much larger way should public expenditures be indicative of the general character of a community, its aims and ideals. When a private citizen points to a judicious investment of his capital as concrete evidence of his ability as a shrewd business man he is judged accordingly, and the same methods applied to a state are equally unerring.

In no way is the public expenditure of a state placed more prominently before the world than in the number, quality and effectiveness of her public institutions. As they are effectively and economically administered so does the state stand that much higher in the congress of commonwealths, and inversely so does their slovenly or incompetent conduct reflect discredit on the people.

The history of the United States abounds with instances where a profligate and corrupt expenditure of public money in the state institutions has resulted in scandal and stigma, and today there are many discreditable monuments to the greed and avarice of man which represent a cost to the state concerned of many times the actual worth of the building produced.

North Dakota can congratulate herself upon the honesty with which her public works of this nature have been carried on and can justly claim that the actual money value of her institutions is many times more than the original amount of the investment. Thus the following table of values, compiled from the most reliable sources, can be pointed to with pride by every citizen as the story of a sound, business like and economical investment of the public funds. Not one of the institutions named but has today an actual market value far in excess of the amount spent by the state on them. The figures represent the amounts expended in permanent improvements, and do not include any of the items which would come under the head of maintenance.

NORTH DAKOTA MAGAZINE

State University	\$520,000
Agricultural College	495,000
Normal School (Valley City).....	329,820
Normal School (Mayville)	179,700
Academy of Science	86,100
State Normal and Industrial	120,000
Soldiers Home	50,000
School of Forestry	43,500
State Penitentiary	362,000
Reform School	52,350
Deaf and Dumb School.....	113,000
Insane Asylum	750,000
Blind School	94,224
Home for Feeble Minded.....	130,000
State Capitol	525,000
<hr/>	
Total	\$3,850,694

AN EMPIRE IN THE MAKING

SOME observant student of mundane happenings—it matters not who—has said that “true enterprise is always seeking expression.” Trite and common-place as the remark seems at first thought to be, nevertheless no truer conclusion was ever voiced.

The words so fully convey the difference between the placid progress of well-established communities or undertakings, where the mere pressure of average increase compels a decorous advance, and the brainy, energetic initiative of the real man or community of enterprise, seeking and finding expression for the pent-up energy within them. To the former class belongs the orderly conduct of some solid and safely intrenched vested interest, that, from the vantage ground of assured prosperity, views with suspicion any but the most conservative and carefully considered changes, while to the latter falls, as a birthright, the pioneer exploitation of unknown territory, its social and commercial development, and to which must be given the credit and glory for that stupendous development of the Northwest that is the wonder of the world and the triumph of empire building.

There is no better example of what can be accomplished by courageous enterprise than that furnished in the history of North Dakota and its development during the past thirty-five years.

In that short space of time an unknown and trackless wilderness has been brought under the cognizance and domination of civilization. Nature has been tamed and induced to yield bounteously in response to the persistent demands made upon her. The travois of the Indian and fur trader has given place to the oxcart, and that in turn to the wagon of the farmer, the traction engine and automobile. The ever-spreading gridiron of great railway systems overlies the land in every direction, bringing to the farmer and ranchman the luxuries of the east, and in turn carrying the riches of the prairie to the populous commercial centers of the Union. Social and commercial growth, with all their intricate machinery of operation, have kept step, side by side, with this advance. Cities,



DICKEY COUNTY.

1. 4,300-Acre Farm of W. H. Bennett. 2. Typical Farm Scene. 3. A Large Family. 4. A Happy Family.

towns and villages have sprung up, grown and prospered, and assumed their relative places in this irresistible on-sweep of a progressive people. Churches, schools and higher institutions of learning have come into being, responsive to the needs of an exacting and discriminating population. Everywhere can be seen and heard the evidences of progress and commerce, voicing the nervous energy of an aspiring commonwealth.

But in these monumental results as a whole, sight should not be lost of the courageous work of individuals who have reached out into the great unknown and blazed the way for those that came after, nor of those who are still looking afield for new ground to break and fresh triumphs to be won. It is the spirit of those who have gone before, and of those who are still in the vanguard of the fight, that renders possible the ceaseless reclamation from primeval uselessness of our great prairie heritage which is being accomplished in our western counties. The grip of a mighty obsession is upon us. The spirit of '76 is yet strong in our midst. Outward and onward is yet the urging cry of our restless people. Whatever may be the rigid, soul-quelling force of eastern environment and the ever tightening bonds of industrial organization, here in the west the opportunity for personal independence and initiative is yet unrestrained, and to him who dares the prize of success and wealth is an assured certainty.

Everywhere in the state can be seen concrete evidence of successful accomplishment. Counties, that two years ago were unorganized wilds, grazing grounds for a few nomadic bands of cattle and sheep, are now the homes of happy and prosperous communities and are pouring their millions of bushels into the world's markets.

To the student of modern progress is offered in North Dakota the sight of an empire in the making, the evolution of a bleak waste of unproductive prairie, home of the prairie dog and rattle snake, into a rich and productive province, possessing the wealth and enjoying the refinements of the most exacting modern civilization.

North Dakota already leads in grain production of all the states in the Union and with her wealth of opportunity and spirit of progress is fast reaching out for supremacy in those allied industries which contribute so much to successful husbandry. The creamery

business is advancing by leaps and bounds and soon all the cream produced in the state will be cared for in the numerous and ever-increasing creameries which are springing up all over the country districts, and which, under the wise laws and ceaseless vigilance of the state officials, are fast being recognized as models of hygienic cleanliness and scientific management. The cattle and horse industries have taken a new lease of life and are rapidly conforming to the altered conditions imposed upon them by the rapid settlement of the country by a farming population. Sheep and swine also are receiving their full share of attention, and wherever possible all branches of agricultural production are being intelligently undertaken.

And back of all is that mainstay of success in the far west, the sturdy spirit of the people themselves, which exemplifies in the highest sense the truth of the aphorism that "enterprise is always seeking expression."

THE GOLDEN RULE

“D O unto others as you would have them do unto you.”
There is no class of people to whom a general compliance with this pregnant command would bring more beneficial results—at the same time performing a simple act of justice—than it would to the grain farmers of North Dakota.

Ever since the wheat product of this state has been looked upon as a quantity to be reckoned with in the great markets of the world, the output of our farms has been more or less at the mercy of speculative operators at terminal points, and the financial needs of the producer, entailing, as it often does, a heavy movement of grain in the late fall months, has been taken advantage of to the full by unscrupulous middlemen, whose only interest in the grain itself has been to so manipulate it as to make a personal profit on its transfer from the farmer to the consumer.

Organized in the most perfect manner, controlling in a large measure the agricultural press, possessing an elaborate private system of gathering grain statistics, experienced in the most effective methods of influencing prices to their own benefit, regardless of the interests of others, this speculative element has exerted a baleful and injurious influence on the natural working of the law of supply and demand, and their operations have resulted in untold damage and injustice to the actual producer.

Small wonder then that the farmer should rise in his wrath and meet combination by combination in his endeavor to compel that equitable consideration which is denied him by present trade conditions.

If a laborer be worthy of his hire then is the farmer entitled to a remunerative return for the time, money and labor expended in the producing of a staple, without which the greater part of the civilized world would be starving tomorrow. An equitable working of the law of supply and demand, with equal justice to the producer and consumer, can only be secured when conditions are such that the financial need of the one cannot be seized upon by the other as an opportunity for unremunerative sale or extortionate profit, or, as at present, render possible the nefarious operations of some money-grabbing speculator, who preys impartially upon both.

Such a condition can only be created by making it possible for the farmer to hold his product until such time as the legitimate

need of the actual consumer calls for it, through legitimate trade channels, for food purposes. Any organization of grain raisers, having this object in view, must therefore be recognized as possessing a legitimate reason for their existence, and the farmers of North Dakota should be commended and encouraged for the determined stand they are taking in furtherance of their just claim for a square deal.

But the golden rule should not be lost sight of in this struggle between avaricious man and the producer struggling for his rights. The claims of the farmers will lose much force with the public if they themselves resort to practices which they condemn in others.

Reasonable foresight in any commercial undertaking is recognized as being absolutely essential to the successful conduct of any business, and the gathering of truthful statistics is just as necessary to an intelligent consideration of the legitimate wheat market as it is in any other line of mercantile pursuit. It is as much to the farmers' interest that a correct estimate of probable crop output be arrived at as it is to the speculator, indeed much more so, for it is the latter who makes his illegitimate profit on false or incorrect figures. A heavy yield in North Dakota should not necessarily mean a lowering of the price in so staple a product as wheat. Nature almost invariably furnishes a counter-balancing shortage elsewhere, which, with an organized ability on the part of our farmers to hold their grain, should enable him to obtain the full, legitimate value of his commodity; whereas the promulgation of incorrect figures, showing a low average yield does harm to the state generally, especially with those who are expecting to make it their future home.

Let the farmers of North Dakota hold their wheat under the wise restrictions of their experienced leaders and advisors, but by no means should they even countenance damaging and incorrect reports which give their enemies ground for specific charges and which besmirch the good name of North Dakota.

YIELDS FOR 1908.

The following are the yields in bushels and acres under cultivation for 1908: Total acreage, 12,348,447; wheat, 69,426,304 bushels; oats, 34,624,137 bushels; barley, 16,121,327 bushels; flax, 8,376,854 bushels; rye, 432,882 bushels; speltz, 1,536,052 bushels; potatoes, 2,833,844 bushels.

